

APPENDIX C

TRAFFIC AND SAFETY REPORTS, 2011-2014

June 9, 2014 Memorandum - Summary of Changes in the 2013 Approved Travel Demand Model

May 14, 2014 Memorandum to Address Updated Traffic Analysis for Alternative D

February 2014 Addendum to Traffic Operations Technical Report

December 2013 Traffic Forecast Study

June 2011 Addendum to Traffic Operations Technical Report

February 2014 Crash Analysis

Pellissippi Parkway Extension

Summary of Changes in the 2013 Approved Travel Demand Model

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6/9/14

The Knoxville Transportation Planning Organization (TPO) adopted an updated travel demand model for horizon year 2034 in June 2013. The new model included several process improvements that have resulted in more accurate calibration. The validated model was approved by the Knoxville TPO as a reasonable approximation of current and future conditions on the Knoxville region's transportation system.

This memorandum explains differences in the prior Knoxville travel demand model (Base Year 2009 / Horizon Year 2030) and the new model (Base Year 2010 / Horizon Year 2034). The new model projects less traffic on the Pellissippi Parkway Extension than the prior travel demand model. The following paragraphs provide a summary of changes that were made during the update process for the Knoxville model that are connected to the reduction in forecasted traffic for the Pellissippi Parkway Extension.

New Socio Economic Forecasts

The updated model includes new socio economic forecasts for Blount County that have a direct influence on traffic projections in the area roadway network. One of the changes in the socio economic forecasts was directly related to the traffic analysis zone (TAZ) containing the Pellissippi Place Research Park development. In the former model, a large amount of the employment growth for Blount County was concentrated in that TAZ. Recently, other development areas in Blount County have been identified, such as the Alcoa West Plant Redevelopment that necessitated a spreading of the employment growth projections over a wider number of TAZs. Reducing the concentration of new jobs in the Pellissippi Place Research Park resulted in lower traffic volumes on State Route 33 and the Pellissippi Parkway Extension.

In addition to changes in the employment projections for the Pellissippi Place Research Park TAZ, the population and employment projections were lowered in the updated model for all of Blount County and especially for a subarea that is influenced by the Pellissippi Parkway Extension. The table below shows population and employment projections for the year 2030 in the prior model and the updated new model. Since the new model is for horizon year 2034, a linear interpolation between the new model forecast years of 2024 and 2034 was used to define a year 2030 TAZ layer to compare with the 2030 TAZ layer used in the original model. The table shows the comparison for Blount County as a whole as well as a sub-area that is shown in Figure 1 that will generally be most directly impacted by the Pellissippi Parkway Extension.

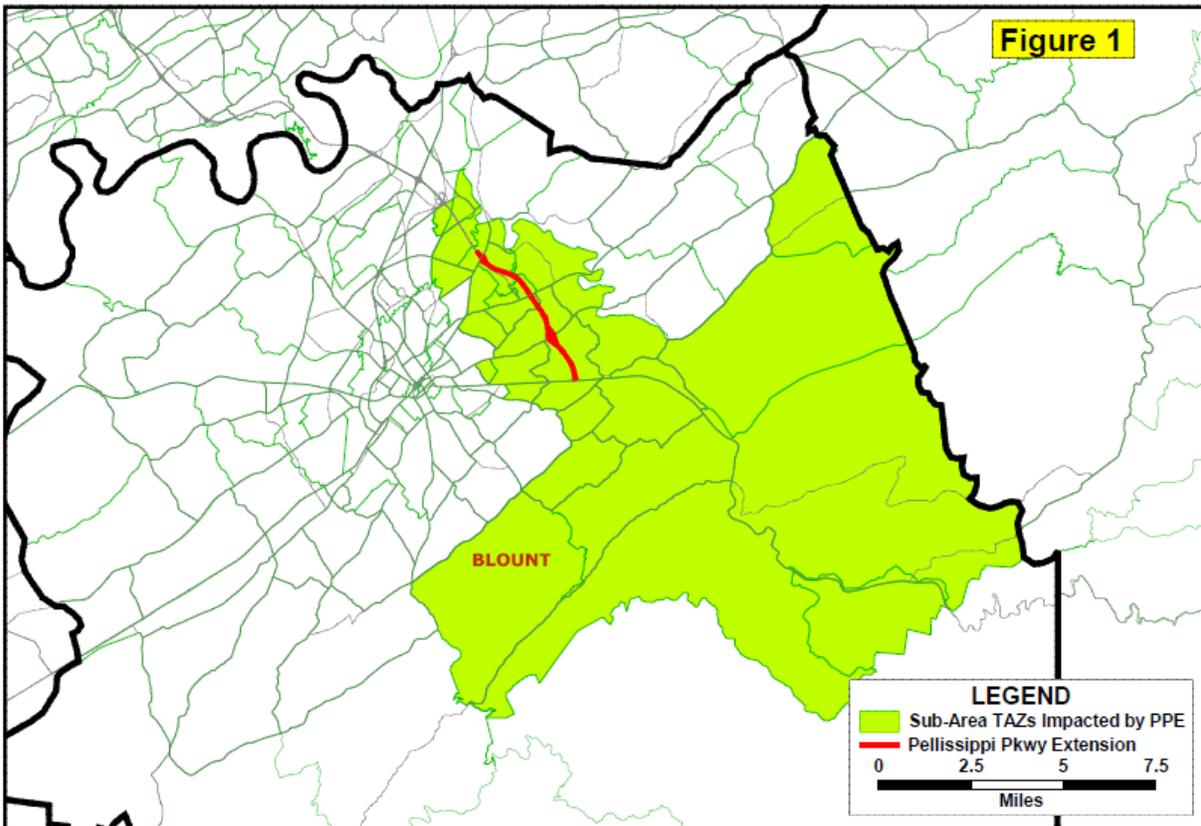
Socio-Economic Assumptions for Blount County

	Prior Model	New Model	% Change
2030 Population	171,907	161,959	-5.8%
2030 Employment	81,035	75,593	-6.7%

Socio-Economic Assumptions for Pellissippi Parkway Extension Subarea

	Prior Model	New Model	% Change
2030 Population	40,201	31,960	-20.5%
2030 Employment	17,184	11,263	-34.5%

As shown in the above table, the reduction of population and employment at the county level is somewhat modest at less than 10%, but the reduction in the area most impacted by the Pellissippi Parkway Extension is much greater at more than 20% and 30% for population and employment respectively.



The socioeconomic forecasts used in the Knoxville travel demand model are typically updated as part of each major Long Range Transportation plan effort, which is on a 4-year cycle. The prior model's population and employment forecasts were derived from Woods & Poole, a company that does national-level forecasts which can be purchased at a county-level. For the updated model, a consultant working for the Knoxville TPO developed socioeconomic forecasts that were reviewed with individual jurisdictions.

Employment forecasts in the updated model were affected by the economic recession. Job losses in the model's study area resulted in a lowering of baseline year 2010 estimates of employment. Even with little change in the overall growth rate, a lower baseline year as a starting point results in lower horizon year employment forecasts.

Improved Calibration

The prior travel demand model was not well calibrated on local routes in the vicinity of the Pellissippi Parkway Extension alignment located east of State Route 33. A comparison of 2009 base year outputs with actual ground count data revealed that the model was overloading certain routes. With that model, manual adjustments had to be made in the traffic forecasting effort for Pellissippi Parkway Extension to resolve the calibration issues.

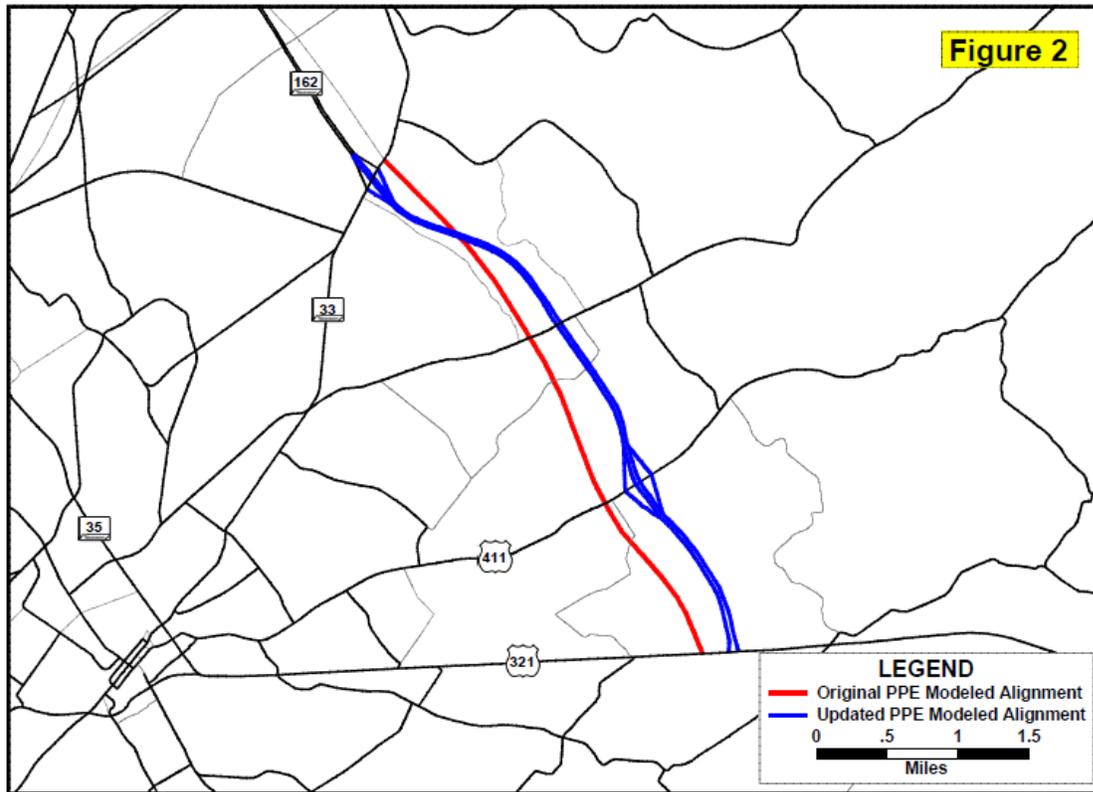
The new travel demand model has much better calibration of local routes as determined by a comparison of 2010 base year volumes with actual ground counts. With this improved calibration, very few manual adjustments were needed in the forecasting effort.

Overall, there have been several major improvements to the overall modeling structure and process since the original Pellissippi Parkway Extension forecasts were made. The number of TAZ's in Blount County has been increased from 117 in the prior model up to 165 in the new model. The additional TAZ detail generally improves the ability to model roadway network changes and additions of new routes in terms of how the network is being loaded.

The new model includes a new "Hybrid" activity/trip based model platform that allows the model to better reflect realistic trip-making. The new platform's disaggregate design and improved destination-choice trip distribution framework eliminates the use of "K-factors" for adjusting distribution of trips as were used in the previous model.

Alignment Shift

In the updated travel demand model, the Pellissippi Parkway Extension was shifted slightly eastward as shown in Figure 2 to better match the most current alignments as documented in the DEIS, dated May 2010. The shift in alignment lengthened the route by approximately 0.2 miles and in turn reduced the volumes from the original alignment by roughly 2,000 vehicles per day. This reduction in volume assignment is likely due to the effects of a longer travel time on the longer route. Also, the adjusted alignment is further away from downtown Maryville which might influence its attractiveness as a route choice.



Network Changes

The new model includes a new access road (Pellissippi Place Access Road) for trips associated with the Pellissippi Place Research Park development. The access road, which will ultimately connect the research park to State Route 33 and Wildwood Road, was not included in the prior model. It produces some effect on traffic patterns by dispersing research park traffic between State Route 33 and Wildwood Road. In the prior model, the research park was modeled with access only via State Route 33.

Conclusions

- The Knoxville travel demand model update that was approved in 2013 included significant revisions to the model’s structure, network, socio-economic assumptions, and calibration. The changes were enhancements aimed at improving the accuracy of the model’s forecasts.
- Combined, the changes in the model have resulted in lower forecasted traffic volumes for the Pellissippi Parkway Extension but those forecasts are based on a sound modeling process that was reviewed and approved by the Knoxville MPO.
- As previously documented, the change in forecasted traffic on the Pellissippi Parkway Extension does not alter the need for the project, the selection of the Preferred Alternative with West Shift, or the conclusion that Alternative D performs poorly and needs no further evaluation.

MEMORANDUM

Date: May 14, 2014
Project: Pellissippi Parkway Extension (SR-162), Blount County, Tennessee
Subject: Updated Traffic Analysis for DEIS Alternative D

Summary

The new regional travel demand model, adopted by the Knoxville Transportation Planning Organization (Knoxville TPO) in June 2013, resulted in reduced projected traffic on the Pellissippi Parkway Extension. The result of the new model raised the question of whether the forecasted traffic volumes for the improved two-lane DEIS Alternative D have been reduced enough to make DEIS Alternative D operate at an acceptable level of service (LOS) in the design year. This memorandum documents the poor performance of DEIS Alternative D based on updated traffic volumes and reinforces the conclusion that the previously selected Preferred Alternative with West Shift remains valid.

Background

The Knoxville TPO adopted a new travel demand model in June 2013, and in August 2013 the Tennessee Department of Transportation (TDOT) determined the need to prepare new traffic forecasts and traffic operations analysis for the Preferred Alternative with West Shift. The results of the forecasts and analysis are documented in the February 2014 *Addendum to the Traffic Operations Technical Report*.

The February 2014 Addendum evaluated two scenarios:

- No-Build (Years 2013, 2020 and 2040)
- Preferred Alternative with West Shift (Years 2020 and 2040)

The results of the analysis of the Preferred Alternative with West Shift apply equally to the previously dismissed DEIS Alternative C, Preferred Alternative (A) and Preferred Alternative with East Shift. The regional travel demand model is not sensitive enough to differentiate among these four-lane alternatives. As a result, the corridor LOS, intersection LOS, and time delay at intersections are the same for all of the four-lane alternatives.

The February 2014 Addendum did not include updated forecasts and analyses for DEIS Alternative D, a previously considered improved two-lane alternative that performed poorly in a prior evaluation (see *Addendum to the Traffic Operations Technical Report*, dated June 2011). The June 2011 Addendum included the following statement:

“Sam Houston School Road, Peppermint Road, Hitch Road, and Helton Road all operate at a poor LOS in the year 2035 for Build Alternative D. The two lanes along these roadways as included in this alternative do not have the capacity to accommodate the additional traffic under the Build scenario.”

Traffic Forecasts

Using existing volumes and the updated regional model, forecasts for DEIS Alternative D for years 2020 and 2040 were prepared. The revised forecast volumes are shown in Table 1. For reference, Table 2 presents the forecasted volumes (2015 and 2035) from the 2011 evaluation of DEIS Alternative D.

Table 1: DEIS Alternative D Traffic Forecasts with the Updated Knoxville TPO Travel Demand Model

Route	From	To	2020 AADT* Forecast	2040 AADT Forecast
Sam Houston School Rd	SR 33	Wildwood Rd	9,340	16,800
Peppermint Rd	Wildwood Rd	Sevierville Rd	9,620	20,580
Hitch Rd	Sevierville Rd	Davis Ford Rd	6,360	14,890
Helton Rd	Davis Ford Rd	Lamar Alexander Pkwy	6,130	15,790

*AADT = annual average daily traffic

Table 2: DEIS Alternative D Traffic Forecasts from 2011 Addendum

Route	From	To	2015 AADT Forecast	2035 AADT Forecast
Sam Houston School Rd	SR 33	Wildwood Rd	15,740	20,840
Peppermint Rd	Wildwood Rd	Sevierville Rd	20,890	27,550
Hitch Rd	Sevierville Rd	Davis Ford Rd	13,880	21,850
Helton Rd	Davis Ford Rd	Lamar Alexander Pkwy	13,880	21,850

Under the new model, forecasted volumes on the local roads that are part of DEIS Alternative D would be substantially lower than the volumes forecasted under the previous model. Not accounting for the five year difference in forecasts, the volumes show a 41 to 56 percent decline for the new base year (2020) compared with the old base year (2015). The horizon year volumes (2040) under the new model declined 19 to 32 percent from the volumes forecasted for 2035 under the previous model. Table 3 summarizes the decline in forecast volumes for each roadway.

Table 3: Changes in Forecasted Volumes for DEIS Alternative D between Previous and Current Regional Models

Route	From	To	Change in Base Year Forecasts (2015 to 2020)	Change in Horizon Year Forecasts (2035 to 2040)
Sam Houston School Rd	SR 33	Wildwood Rd	-41%	-19%
Peppermint Rd	Wildwood Rd	Sevierville Rd	-54%	-25%
Hitch Rd	Sevierville Rd	Davis Ford Rd	-54%	-32%
Helton Rd	Davis Ford Rd	Lamar Alexander Pkwy	-56%	-28%

Corridor LOS Results

The updated AADTs for DEIS Alternative D were analyzed using the two-lane highway analysis methodology described on pages 5-7 of the February 2014 Addendum. The analysis was

conducted using HCS 2010 (based on the *Highway Capacity Manual 2010*), a more current version of the *Highway Capacity Software* that replaces the HCS Plus version used for the 2011 Addendum. The critical inputs and results of the updated capacity analysis for 2020 and 2040 volumes are shown in Tables 4 and 5, respectively.

Table 6 provides a summary comparison of corridor LOS for the updated traffic volumes with DEIS Alternative D versus existing and No-Build conditions. Table 7 compares the LOS results for DEIS Alternative D with the updated traffic volumes compared to previously analyzed volumes based on the prior regional model.

Observations

- Even with lower forecasted traffic volumes based on the current regional travel demand model, DEIS Alternative D would operate poorly (LOS E or F) in the 2020 and 2040 horizon years. The corridor LOS analysis clearly indicates that the forecast volumes for DEIS Alternative D exceed the carrying capacity of a two-lane road. This is true even if that network of two-lane roads is improved by wider lanes, improved shoulders, and the straightening of substandard curves.
- Given that the corridor LOS analysis demonstrates that the forecast volumes for DEIS Alternative D exceed the carrying capacity of a two-lane road, an intersection LOS analysis is expected to yield poor results like the corridor LOS analysis produced. Even if some intersection movements are acceptable with DEIS Alternative D, the overall corridor would provide poor traffic operations as demonstrated by the corridor LOS.

Table 4: DEIS Alternative D (2020) Corridor Level of Service

Route	Begin Milepoint	End Milepoint	Section Length (miles)	2020 ADT	K-Factor	2020 DHV	Posted Speed Limit (mph)	% Trucks and Buses	Estimated Travel Speed (MPH)	% Time Spent Following	LOS
Sam Houston	SR 33 MP 0.000	Wildwood Rd MP 2.650	2.65	9,340	0.160	1494	50	2.0%	35.5	88.1	E
Peppermint Road	Wildwood Rd MP 0.000	Sevierville Rd MP 1.100	1.10	9,620	0.130	1251	50	2.0%	37.2	83.9	E
Hitch Road	Sevierville Rd MP 1.202	Davis Ford Rd MP 0.000	1.20	6,360	0.150	954	50	1.0%	39.2	77.8	E
Helton Road	Davis Ford Rd MP 0.875	Lamar Alexander Pkwy MP 0.000	0.88	6,130	0.150	920	50	1.0%	39.4	76.3	E
	LOS E - F										
	LOS A - D										
	Speed <45, Not Analyzed										

Table 5: DEIS Alternative D (2040) Corridor Level of Service

Route	Begin Milepoint	End Milepoint	Section Length (miles)	2040 ADT	K-Factor	2040 DHV	Posted Speed Limit (mph)	% Trucks and Buses	Estimated Travel Speed (MPH)	% Time Spent Following	LOS
Sam Houston	SR 33 MP 0.000	Wildwood Rd MP 2.650	2.65	16,800	0.160	2688	50	2.0%	25.9	100.0	F
Peppermint Road	Wildwood Rd MP 0.000	Sevierville Rd MP 1.100	1.10	20,580	0.130	2675	50	2.0%	26.0	100.0	F
Hitch Road	Sevierville Rd MP 1.202	Davis Ford Rd MP 0.000	1.20	14,890	0.150	2234	50	1.0%	29.8	96.4	E
Helton Road	Davis Ford Rd MP 0.875	Lamar Alexander Pkwy MP 0.000	0.88	15,790	0.150	2369	50	1.0%	28.6	97.5	F
	LOS E - F										
	LOS A - D										
	Speed <45, Not Analyzed										

Table 6: Corridor Level of Service Comparison for Updated DEIS Alternative D vs. No-Build

Route	Begin Milepoint	End Milepoint	Existing	2020 No-Build	2040 No-Build	2020 Alternative D	2040 Alternative D
Sam Houston	SR 33 MP 0.000	Wildwood Rd MP 2.650	C	C	C	E	F
Peppermint Road	Wildwood Rd MP 0.000	Sevierville Rd MP 1.100	C	C	D	E	F
Hitch Road	Sevierville Rd MP 1.202	Davis Ford Rd MP 0.000	B	B	C	E	E
Helton Road	Davis Ford Rd MP 0.875	Lamar Alexander Pkwy MP 0.000	A	A	A	E	F

Table 7: Corridor Level of Service Comparison for Updated DEIS Alternative D vs. Prior Analysis

Route	Begin Milepoint	End Milepoint	2015 Alternative D	2035 Alternative D	2020 Alternative D	2040 Alternative D
Sam Houston	SR 33 MP 0.000	Wildwood Rd MP 2.650	F	F	E	F
Peppermint Road	Wildwood Rd MP 0.000	Sevierville Rd MP 1.100	F	F	E	F
Hitch Road	Sevierville Rd MP 1.202	Davis Ford Rd MP 0.000	E	F	E	E
Helton Road	Davis Ford Rd MP 0.875	Lamar Alexander Pkwy MP 0.000	E	F	E	F

SR 162 (PELLISSIPPI PARKWAY EXTENSION)

ADDENDUM TO THE TRAFFIC OPERATIONS TECHNICAL REPORT

**BLOUNT COUNTY, TENNESSEE
P.I.N. 101423.00**

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February 2014

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LIST OF ACRONYMS

AASHTO – American Association of State Highway and Transportation Officials
EIS – Environmental Impact Statement
FHWA – Federal Highway Administration
HCM – Highway Capacity Manual 2010
HCS 2010 – Highway Capacity Software 2010
LOS – Level of Service
NEPA – National Environmental Policy Act
RAH – Relocated Alcoa Highway
TDOT – Tennessee Department of Transportation
TRIMS – Tennessee Roadway Information Management System

1.0 INTRODUCTION

The Tennessee Department of Transportation (TDOT), in cooperation with the Federal Highway Administration (FHWA), is proposing to extend and construct Pellissippi Parkway (Interstate 140 or I-140) from its current terminus at State Route (SR) 33 (Old Knoxville Highway) to SR 73 (US 321 or Lamar Alexander Highway) in Blount County.

TDOT and FHWA have prepared a Draft Environmental Impact Statement (DEIS) in accordance with the National Environmental Policy Act (NEPA) to identify and evaluate the environmental effects of the proposed project and to identify measures to minimize impacts. A traffic operations technical study was prepared in October 2008 and the results of this technical study were incorporated into Chapters 1 and 3 of the DEIS.

Following approval of the DEIS in April 2010, the review period began for agencies and the public. Comments have been received from a number of sources including agencies, the general public, Citizens Against the Pellissippi Parkway Extension, Inc. (CAPPE), City of Alcoa, and the Knoxville Regional Transportation Planning Organization (TPO). A revised traffic report (September 7, 2011) served as an addendum to the original and previously updated Traffic Operations Technical Report and included updates resulting from public and agency comments provided during the DEIS review period.

In 2012, TDOT announced the selection of Build Alternative A as the Preferred Alternative for analysis in the FEIS. In June 2013, TDOT made a minor alignment modification to the Preferred Alternative in the southern portion of the project.

Subsequent to the 2011 traffic report update, the Knoxville TPO updated its Regional Travel Demand Model (adopted in June 2013 for horizon year 2034). As a result of the updated model, TDOT determined the need to prepare new traffic forecasts and to conduct a new traffic operations analysis for the Preferred Alternative (including the minor alignment modification). TDOT contracted with Sain Associates, Inc. to prepare new traffic forecasts for the study area; the results are included in the *Traffic Forecasts Study*, December 23, 2013.

This latest traffic operations report addendum evaluates the No-Build Alternative and the Preferred Alternative and incorporates traffic forecasts developed by Sain Associates, Inc. resulting from the 2013 model update. The revised traffic forecasts are shown in **Figures 1 and 2** on the following pages.

The scenarios evaluated are as follows:

- No-Build (Years 2013, 2020 and 2040)
- Preferred Alternative (Years 2020 and 2040)

The following sections provide the updated analysis for each of these alternatives.

Figure 1: No-Build Forecasted AADT

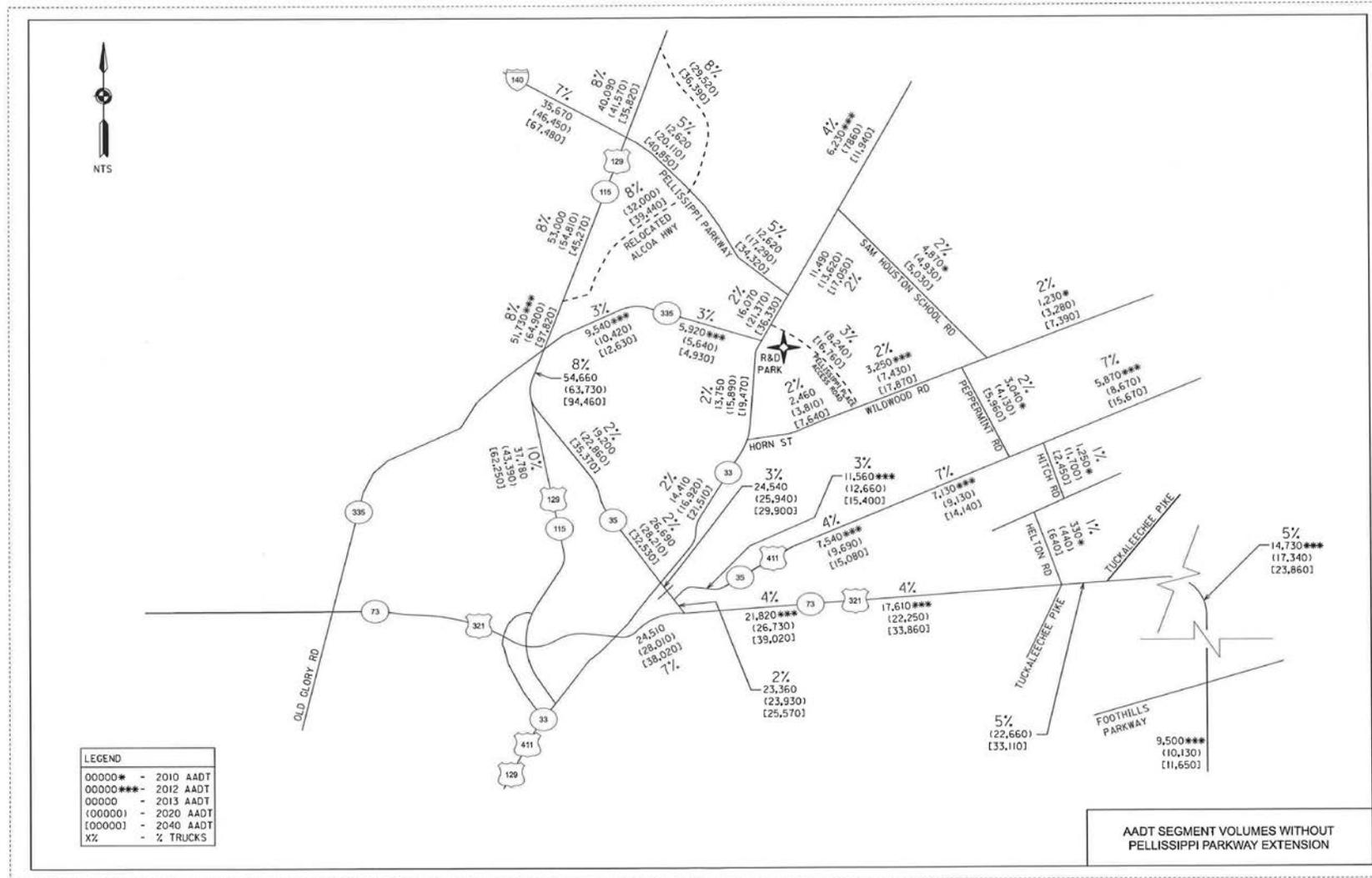
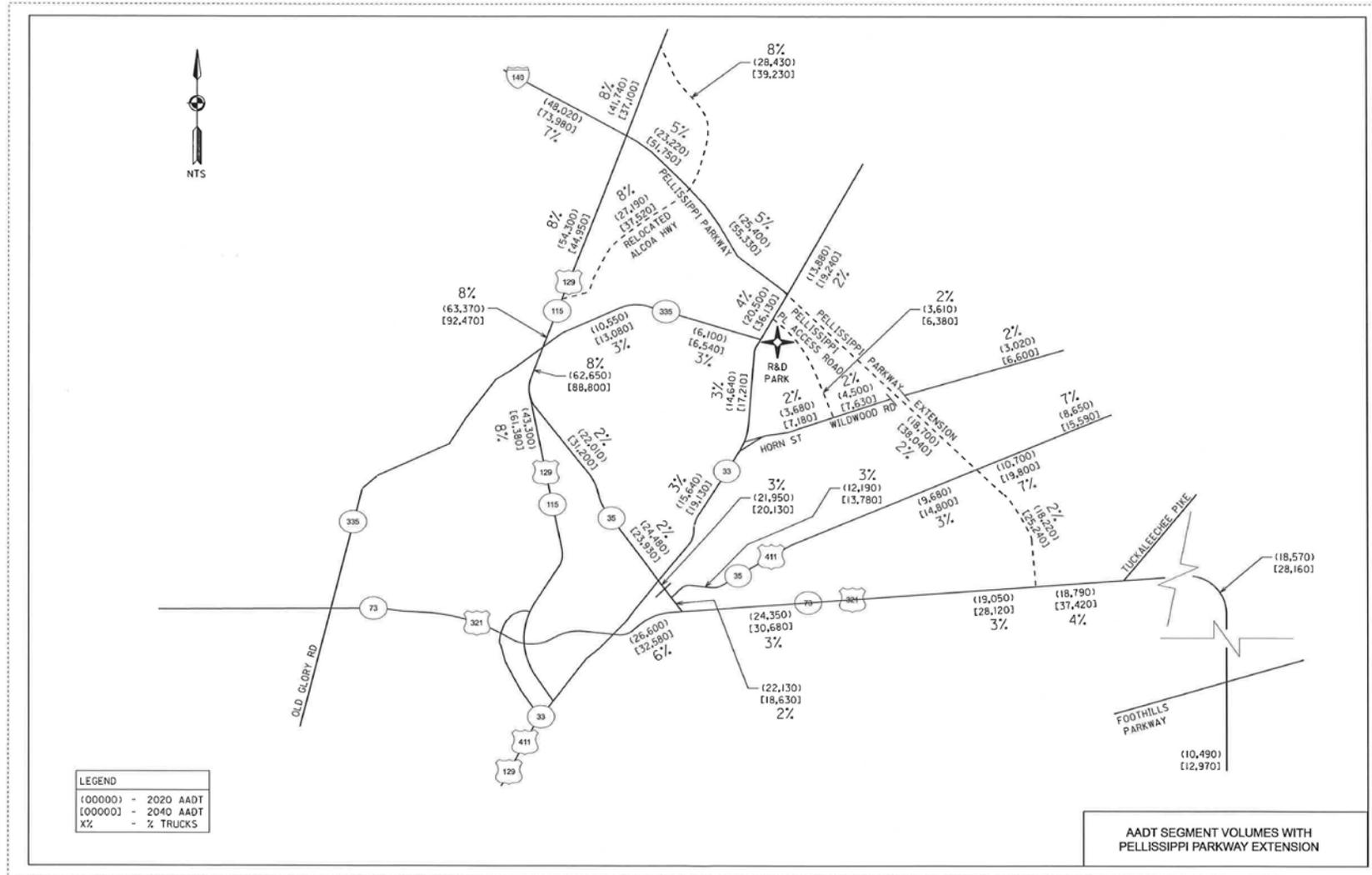


Figure 2: Preferred Alternative Forecasted AADT



2.0 CORRIDOR LEVEL OF SERVICE ANALYSIS

To evaluate the effects of the project on traffic in the study area, the traffic operations analysis including a Level of Service (LOS) analysis was conducted at the corridor level (roadway sections) for the No-Build Alternative and Preferred Alternative for the years 2020 and 2040. Existing (2013) LOS was determined for comparison purposes. Traffic operations analysis was conducted for Design Hour Volume (DHV). The methodology and updated results for the corridor level traffic analysis are presented in the following subsections. Section 3.0 that follows presents the updated results for the traffic analysis at key intersections.

2.1 Study Area Roadways

The following roadways were identified as either routes along proposed interchanges with an extension of Pellissippi Parkway or as routes currently used in lieu of the proposed Pellissippi Parkway Extension.

- East Broadway / Old Knoxville Highway (SR 33)
- US 411 (SR 35)
- Lamar Alexander Parkway (SR 73 / US 321)
- Alcoa Highway (SR 115 / US 129)
- Hall Road (SR 35)
- Washington Street (SR 35)
- Wildwood Road
- Sam Houston School Road
- Peppermint Road
- Hitch Road
- Helton Road

Each of these roadways has been evaluated for all analysis years to determine the effects of the proposed project on existing and future traffic operations in the vicinity of the project.

The proposed Relocated Alcoa Highway (RAH), which would extend east of the existing Alcoa Highway (SR 115 / US 129) generally between Cusick Road and south of the Blount / Knox County line, is included in this analysis. It is part of the 2020 and 2040 No-Build and Preferred Alternative analysis since it is included in the region's long range transportation plan, *Regional Mobility Plan 2040*, as a constrained roadway project for the period 2016-2019.

The proposed Southern Loop was originally included in the 2035 Future Build Analysis for the previous iteration of traffic analysis. The Southern Loop was not included in the *Regional Mobility Plan 2040* and therefore is not considered as part of the traffic operations analysis for this update.

2.2 Methodology

LOS is a qualitative measure of traffic conflicts, delay, driver discomfort, and congestion. LOS is described according to a letter rating system ranging from LOS A (free flow, minimal or no delays – best conditions) to LOS F (stop and go conditions, very long delays – worst conditions). There are several ways to estimate LOS depending on the type of facility. The analysis methodologies used for this study are described below.

It should be noted that since the last update to the project's traffic operations report, the Highway Capacity Software (HCS) has undergone a substantial update to the operating system which is based on the updates to the *Highway Capacity Manual 2010* (HCM 2010). The current version is HCS 2010 which replaces the HCS Plus version used for the previous analysis. Any comparisons to previous traffic operation evaluations should note that there are some differences in the analysis methodology and cannot be directly compared for a magnitude in change.

Two-Lane Highway Analysis

The HCS 2010 two-lane road analysis software module based on the HCM 2010 was used to evaluate two-lane highways (e.g., SR 33, US 411, Wildwood Road, Sam Houston School Road, Peppermint Road, Hitch Road, and Helton Road). For this method, there are three classes of roadways: Class I highways that include higher speed arterials and daily commuter routes; Class II highways that include lower speed collector roadways and roads primarily designed to provide access; and Class III highways that serve moderately developed areas. The two-lane roadways in this study area are either Class I or Class III; there are no identified Class II roadways in the study area.

As SR 33 and US 411 are major state and nationally designated routes in this section of Tennessee, they were assumed to be Class I highways.

As they currently exist, Wildwood Road, Sam Houston School Road, Peppermint Road, Hitch Road, and Helton Road, were assumed to be Class III highways based on their lower speeds limits (between 25 mph and 45 mph) and the fact that they are within a moderately developed area.

LOS for Class I highways is based on the estimated average travel speeds and percent time vehicles spend following other vehicles. For Class II highways LOS is based on the percent time vehicles spend following other vehicles only. The LOS criteria for two-lane highways is shown in **Table 1**.

Table 1: LOS Criteria for Two-Lane Highways

LOS	Class I Highways		Class II Highways	Class III Highways
	Percent Time Spent Following (%)	Average Travel Speed (mi/h)	Percent Time Spent Following (%)	Percent of Free Flow Speed (%)
A	≤ 35	>55	≤ 40	>91.7
B	>35 – 50	>50 – 55	>40 – 55	>83.3 – 91.7
C	>50 – 65	>45 – 50	>55 – 70	>75.0 – 83.3
D	>65 – 80	>40 – 45	>70 – 85	>66.7 – 75.0
E	>80	≤40	>85	≤66.7
F	LOS F applies whenever the flow rate exceeds the capacity*			

Source: *Highway Capacity Manual 2010*

*Capacity is 3,200 passenger cars per hour (pc/h) for the two-way flow rate

LOS D is the threshold for desirable traffic operations in this study. According to the *AASHTO-Geometric Design of Highways and Streets* reference manual, a LOS D threshold for freeways and arterials can be an appropriate threshold in developed areas. While the study area is not currently a heavily developed, urbanized area, substantial development pressures may be expected in the future due to the population growth occurring in Blount County. This also includes the consideration of on-going and future development such as the Pellissippi Place research and development park currently under construction east of SR 33 in the vicinity of the proposed Pellissippi Parkway Extension. Therefore, as most of the study area fits this criterion (or will in the future) it is acceptable practice to use this as the traffic operations threshold. LOS below this threshold (i.e., LOS E or F) is noted as undesirable and warranting improvement.

Multilane Highway Analysis

To analyze traffic operations for the four-lane or greater highway sections (US 129, SR 35, US 321, and the RAH) the HCS 2010 multilane analysis module was used. This is based on the HCM 2010 methodology. For each section, the estimated travel speed and the resulting LOS was calculated.

LOS for multilane highway sections is based on density in terms of passenger cars per mile per lane (pc/mi/ln) as shown in **Table 2**. Density is used to define LOS because it is an indicator of freedom to maneuver within the traffic stream and the proximity to other vehicles. Speed in terms of mean passenger-car speed and volume-to-capacity (v/c) ratios are interrelated with density and can be used to characterize a multilane highway segment.

Similar to the two-lane highway analysis, LOS D is the lowest threshold for desirable traffic operations used in this study. For multilane highways, LOS D corresponds to a density between 26 and 35 pc/mi/ln. Refer to the Chapter 14, Volume 2 of HCM 2010 for more specific information.

Table 2: LOS Criteria for Multilane Highways

LOS	Density Range (pc/mi/ln)
A	0 – 11
B	> 11 – 18
C	> 18 – 26
D	>26 – 35
E (55 mph)	> 35 – 41
E (45 mph)	> 35 – 45
F	Demand exceeds capacity*
F (55 mph)	> 41
F (45 mph)	> 45

Source: *Highway Capacity Manual 2010*

*Capacity depends on Free Flow Speed (FFS) & ranges from 1,900 to 2,200 pc/h/ln

Freeway Analysis

To analyze peak hour traffic operations for Pellissippi Parkway (I-140), the HCS 2010 Freeways analysis package was used which is also based on the HCM 2010 methodology. For each section of I-140, the estimated travel speed and the resulting LOS was calculated. LOS for freeway sections is also based on density similar to the ranges used for multilane highways (refer to Table 2). Again, LOS D is the threshold for desirable traffic operations used in this study. For freeways, a LOS D corresponds to a density between 26 and 35 passenger cars per mile per lane. Refer to the Chapter 11, Volume 2 of HCM 2010 for more specific information.

2.3 No-Build Corridor LOS Results

The 2013 average annual daily traffic volumes and forecasted traffic volumes (2020 and 2040) for the No-Build Alternative were provided as part of the 2013 *Traffic Forecast Study* prepared for this project by Sain Associates, Inc. Also included in the *Traffic Forecast Study* were truck percentages for all analysis years. Design Hour Volume (DHV) for highway segments were calculated using a K-factor¹ obtained from TDOT's Tennessee Roadway Information Management System (TRIMS) Blount County Traffic Database. Functional classification, median type, directional split, current lane widths, shoulder widths, percent passing, speed limit, and access points per mile were also obtained from TRIMS as well as from observations of roadways during field visits.

The RAH (also referred to as Alcoa Highway Bypass) is shown for the future years of 2020 and 2040. For RAH, several geometric assumptions were made based on initial design plans and the current operating characteristics of existing Alcoa Highway (US 129). These assumptions include an assumed K-factor of 0.100, a 55 mph posted speed, four access points per mile, three lanes per direction, and a 55/45 directional percentage split of traffic. The percent trucks were provided in the traffic forecast.

Generally, most highway characteristics were available through TRIMS for the non state-maintained roads of Sam Houston School Road, Peppermint Road, Hitch Road, and Helton Roads. Several assumptions were made for these roadways for the operational analysis including:

- Class III Roadway
- No passing zones
- Eight (8) access points per mile
- Zero (0) percent recreational vehicles

The calculated LOS for each highway segment is shown on the following tables, **Tables 3** through **5** and on **Figures 3** through **5**. It should be noted that sections with an associated speed less than 45 mph were not analyzed as the HCS 2010 software will not calculate a LOS if the free-flow speed (conservatively assumed to be the posted speed limit for the purpose of analysis) is less than 45 mph. Typically these sections are located in an urbanized area where traffic signals dictate the traffic operations. Therefore, to

¹ The K-factor is used to compute design hour volumes (DHV) and is based on the 30th highest hourly volume of the year.

determine the operations along these sections please refer to the intersection traffic analysis provided in Section 3.0 of this report.

The shading on the tables and figures indicates acceptable versus poor operating conditions. Green shading was used to indicate acceptable traffic operations (LOS D or better) with red used to indicate poor traffic operations (LOS E or F). Gray shading indicates that the LOS could not be calculated due to the inability of these software modules to determine the corridor LOS for urban streets with speeds less than 45 mph.

Table 3: 2013 Existing Corridor LOS

Route	Section	Begin Milepoint	End Milepoint	Section Length (miles)	2013 ADT	K-Factor	2013 DHV	Posted Speed Limit (mph)	% Trucks and Buses	Estimated Travel Speed (MPH)	% Time Spent Following	Density (pc/mi/ln)	LOS
Wildwood Road	1	E. Broadway/Old Knoxville Hwy (SR 33) MP 0.000	Reservoir Rd MP 1.309	1.31	2,460	0.110	271	45	2.0%	34.1	54.7	N/A	B
	2	Reservoir Rd MP 1.309	Sam Houston School Rd MP 2.650	1.34	3,250	0.110	358	45	2.0%	32.8	59.7	N/A	B
	3	Sam Houston School Rd MP 2.650	End of Study Area MP 4.740	2.09	1,230	0.110	135	45	2.0%	36.4	44.4	N/A	A
Pellissippi Parkway	1	Topside Rd MP 0.810	Alcoa Hwy (SR 115/US 129) MP 2.240	1.43	35,670	0.120	4280	60	7.0%	60.0	N/A	21.9	C
	2	Alcoa Hwy (SR 115/US 129) MP 2.240	Relocated Alcoa Highway MP 3.240	1.00	12,620	0.120	1514	60	5.0%	60.0	N/A	7.5	A
	3	Relocated Alcoa Highway MP 3.240	E. Broadway/Old Knoxville Hwy (SR 33) MP 4.710	1.47	12,620	0.130	1641	60	5.0%	60.0	N/A	8.2	A
Lamar Alexander Parkway (SR 73 / US 321)	3	E. Broadway/Old Knoxville Hwy (SR 33) MP 11.650	Jones Ave MP 12.526	0.87	24,510	0.100	2451	40	7.0%				
	4	Jones Ave MP 12.520	Merritt Rd MP 13.980	1.46	21,820	0.100	2182	50	4.0%	50.0	N/A	16.7	B
	5	Merritt Rd MP 13.980	Tuckaleechee Pk MP 17.020	3.04	17,610	0.100	1761	50	4.0%	50.0	N/A	12.6	B
	6	Tuckaleechee Pk MP 17.020	Melrose Station Rd MP 20.020	3.00	14,730	0.100	1473	55	5.0%	55.0	N/A	8.9	A
	7	Melrose Station Rd MP 20.020	Foothills Pkwy MP 22.400	2.38	9,500	0.100	950	55	5.0%	55.0	N/A	5.8	A
Hall Road (SR 35)	1	Alcoa Hwy (SR 115/US 129) MP 0.000	Bessemer St MP 1.520	1.52	19,200	0.110	2112	45	2.0%	45.0	N/A	15.0	B
	2	Bessemer St MP 1.520	E. Broadway/Old Knoxville Hwy (SR 33) MP 2.590	1.07	26,690	0.100	2669	35	2.0%				
Washington Street (SR 35)	1	E. Broadway/Old Knoxville Hwy (SR 33) MP 2.590	US 411 (SR 35) MP 2.820	0.23	25,540	0.100	2554	30	3.0%				
	2	US 411 (SR 35) MP 0.000	Lamar Alexander Pkwy (SR 73/US 321) MP 0.160	0.16	23,360	0.100	2336	30	2.0%				
US 411 (SR 35)	1	Washington St (SR 35) MP 2.820	S. Everett High Rd MP 3.690	0.87	11,560	0.100	1156	40	3.0%				
	2	S. Everett High Rd MP 3.690	Westfield Dr 4.527	0.84	7,540	0.100	754	45	4.0%	24.2	73.4	N/A	E
	3	Westfield Dr 4.527	Hitch Rd 7.254	2.73	7,130	0.110	784	45	7.0%	26.4	74.4	N/A	E
	4	Hitch Rd 7.254	End of Study Area 7.990	0.74	5,870	0.110	646	45	7.0%	27.2	71.3	N/A	E

Table 3: 2013 Existing Corridor LOS (cont.)

Route	Section	Begin Milepoint	End Milepoint	Section Length (miles)	2013 ADT	K-Factor	2013 DHV	Posted Speed Limit (mph)	% Trucks and Buses	Estimated Travel Speed (MPH)	% Time Spent Following	Density (pc/mi/ln)	LOS
E. Broadway / Old Knoxville Highway (SR 33)	3	Hall Rd MP 12.340	Wildwood Rd MP 14.206	1.87	14,410	0.100	1441	30	2.0%				
	4	Wildwood Rd MP 14.206	Hunt Rd MP 15.470	1.26	13,750	0.100	1375	40	2.0%				
	5	Hunt Rd MP 15.470	Pellissippi Pky MP 15.920	0.45	16,070	0.110	1768	40	2.0%				
	6	Pellissippi Pky MP 15.920	Sam Houston School Rd MP 16.370	0.45	11,490	0.130	1494	40	2.0%				
	7	Sam Houston School Rd MP 16.370	County Line MP 20.660	4.29	6,230	0.140	872	50	4.0%	34.7	77.1	N/A	E
Alcoa Highway (SR 115 / US 129)	3	Louisville Rd (MP 13.020)	Hall Rd (SR 35) MP 14.280	1.26	37,780	0.110	4156	55	10.0%	54.8	N/A	27.1	D
	4	Hall Rd (SR 35) MP 14.280	Hunt Rd MP 15.020	0.74	54,660	0.110	6013	55	8.0%	51.3	N/A	40.9	E
	5	Hunt Rd MP 15.020	Cusick Rd MP 16.000	0.98	51,730	0.110	5690	50	8.0%	*	N/A	*	F
	6	Cusick Rd MP 16.000	Pellissippi Pky MP 17.660	2.64	53,000	0.110	5830	50	8.0%	*	N/A	*	F
	7	Pellissippi Pky MP 17.660	County Line MP 20.400	2.74	40,090	0.110	4410	55	8.0%	50.0	N/A	28.0	D
Sam Houston	1	SR 33 MP 0.000	Wildwood Rd MP 2.650	2.65	4,870	0.160	779	45	2.0%	31.1	72.1	N/A	C
Peppermint Road	1	Wildwood Rd MP 0.000	Sevierville Rd MP 1.100	1.10	3,040	0.130	395	35	2.0%	28.3	61.7	N/A	C
Hitch Road	1	Sevierville Rd MP 1.202	Davis Ford Rd MP 0.000	1.20	1,250	0.150	188	25	1.0%	26.4	48.6	N/A	B
Helton Road	1	Davis Ford Rd MP 0.875	Lamar Alexander Pkwy MP 0.000	0.88	330	0.150	50	25	1.0%	28.3	35.0	N/A	A

Table 4: 2020 No-Build Corridor LOS

Route	Section	Begin Milepoint	End Milepoint	Section Length (miles)	2020 ADT	K-Factor	2020 DHV	Posted Speed Limit (mph)	% Trucks and Buses	Estimated Travel Speed (MPH)	% Time Spent Following	Density (pc/mi/ln)	LOS
Wildwood Road	1	E. Broadway/Old Knoxville Hwy (SR 33) MP 0.000	Reservoir Rd MP 1.309	1.31	3,810	0.110	419	45	2.0%	32.4	64.0	N/A	C
	2	Reservoir Rd MP 1.309	Sam Houston School Rd MP 2.650	1.34	7,430	0.110	817	45	2.0%	30.2	74.2	N/A	C
	3	Sam Houston School Rd MP 2.650	End of Study Area MP 4.740	2.09	3,280	0.110	361	45	2.0%	32.8	60.1	N/A	B
Pellissippi Parkway	1	Topside Rd MP 0.810	Alcoa Hwy (SR 115/US 129) MP 2.240	1.43	46,450	0.120	5574	60	7.0%	59.8	N/A	28.6	D
	2	Alcoa Hwy (SR 115/US 129) MP 2.240	Relocated Alcoa Highway MP 3.240	1.00	20,110	0.120	2413	60	5.0%	60.0	N/A	12.0	B
	3	Relocated Alcoa Highway MP 3.240	E. Broadway/Old Knoxville Hwy (SR 33) MP 4.710	1.47	17,290	0.130	2248	60	5.0%	60.0	N/A	11.2	B
Lamar Alexander Parkway (SR 73 / US 321)	3	E. Broadway/Old Knoxville Hwy (SR 33) MP 11.650	Jones Ave MP 12.526	0.87	28,010	0.100	2801	40	7.0%				
	4	Jones Ave MP 12.520	Merritt Rd MP 13.980	1.46	26,730	0.100	2673	50	4.0%	50.0	N/A	20.4	C
	5	Merritt Rd MP 13.980	Tuckaleechee Pk MP 17.020	3.04	22,250	0.100	2225	50	4.0%	50.0	N/A	16.0	B
	6	Tuckaleechee Pk MP 17.020	Tuckaleechee Pk MP 17.320	0.30	22,660	0.100	2266	55	5.0%	55.0	N/A	13.8	B
	7	Tuckaleechee Pk MP 17.320	Melrose Station Rd MP 20.020	2.70	17,340	0.100	1734	55	5.0%	55.0	N/A	10.5	A
	8	Melrose Station Rd MP 20.020	Foothills Pkwy MP 22.400	2.38	10,130	0.100	1013	55	5.0%	55.0	N/A	6.1	A
Hall Road (SR 35)	1	Alcoa Hwy (SR 115/US 129) MP 0.000	Bessemer St MP 1.520	1.52	22,860	0.110	2515	45	2.0%	45.0	N/A	17.9	B
	2	Bessemer St MP 1.520	E. Broadway/Old Knoxville Hwy (SR 33) MP 2.590	1.07	28,210	0.100	2821	35	2.0%				
Washington Street (SR 35)	1	E. Broadway/Old Knoxville Hwy (SR 33) MP 2.590	US 411 (SR 35) MP 2.820	0.23	25,940	0.100	2594	30	3.0%				
	2	US 411 (SR 35) MP 0.000	Lamar Alexander Pkwy (SR 73/US 321) MP 0.160	0.16	23,930	0.100	2393	30	2.0%				
US 411 (SR 35)	1	Washington St (SR 35) MP 2.820	S. Everett High Rd MP 3.690	0.87	12,660	0.100	1266	40	3.0%				
	2	S. Everett High Rd MP 3.690	Westfield Dr 4.527	0.84	9,690	0.100	969	45	4.0%	22.8	79.7	N/A	E
	3	Westfield Dr 4.527	Hitch Rd 7.254	2.73	9,130	0.110	1004	45	7.0%	25.0	80.5	N/A	E
	4	Hitch Rd 7.254	End of Study Area 7.990	0.74	8,670	0.110	954	45	7.0%	25.3	79.2	N/A	E

Table 4: 2020 No-Build Corridor LOS (cont.)

Route	Section	Begin Milepoint	End Milepoint	Section Length (miles)	2020 ADT	K-Factor	2020 DHV	Posted Speed Limit (mph)	% Trucks and Buses	Estimated Travel Speed (MPH)	% Time Spent Following	Density (pc/mi/ln)	LOS
E. Broadway / Old Knoxville Highway (SR 33)	3	Hall Rd MP 12.340	Wildwood Rd MP 14.206	1.87	16,920	0.100	1692	30	2.0%				
	4	Wildwood Rd MP 14.206	Hunt Rd MP 15.470	1.26	15,890	0.100	1589	40	2.0%				
	5	Hunt Rd MP 15.470	Pellissippi Pky MP 15.920	0.45	21,370	0.110	2351	40	2.0%				
	6	Pellissippi Pky MP 15.920	Sam Houston School Rd MP 16.370	0.45	13,620	0.130	1771	40	2.0%				
	7	Sam Houston School Rd MP 16.370	County Line MP 20.660	4.29	7,860	0.140	1100	50	4.0%	33.3	83.0	N/A	E
Alcoa Highway (SR 115 / US 129)	3	Louisville Rd (MP 13.020)	Hall Rd (SR 35) MP 14.280	1.26	43,390	0.110	4773	55	10.0%	53.7	N/A	31.8	D
	4	Hall Rd (SR 35) MP 14.280	Hunt Rd MP 15.020	0.74	63,730	0.110	7010	55	8.0%	*	N/A	*	F
	5	Hunt Rd MP 15.020	Relocated Alcoa Hwy MP 16.000	0.98	64,900	0.110	7139	50	8.0%	*	N/A	*	F
	6	Relocated Alcoa Hwy MP 16.000	Pellissippi Pky MP 17.660	2.64	54,810	0.110	6029	50	8.0%	*	N/A	*	F
	7	Pellissippi Pky MP 17.660	County Line MP 20.400	2.74	41,570	0.110	4573	55	8.0%	49.9	N/A	29.1	D
Sam Houston	1	SR 33 MP 0.000	Wildwood Rd MP 2.650	2.65	4,930	0.160	789	45	2.0%	31.0	73.9	N/A	C
Peppermint Road	1	Wildwood Rd MP 0.000	Sevierville Rd MP 1.100	1.10	4,130	0.130	537	35	2.0%	27.5	67.8	N/A	C
Hitch Road	1	Sevierville Rd MP 1.202	Davis Ford Rd MP 0.000	1.20	1,700	0.150	255	25	1.0%	25.2	53.5	N/A	B
Helton Road	1	Davis Ford Rd MP 0.875	Lamar Alexander Pkwy MP 0.000	0.88	440	0.150	66	25	1.0%	28.1	37.0	N/A	A
Relocated Alcoa Highway	1	Alcoa Highway (SR 115 / US 129)	Pellissippi Pky	Not Determined	32,000	0.100	3200	55	8.0%	50.0	N/A	13.3	B
	2	Pellissippi Pky	Alcoa Highway (SR 115 / US 129)	Not Determined	29,520	0.100	2952	55	8.0%	50.0	N/A	12.2	B

Table 5: 2040 No-Build Corridor LOS

Route	Section	Begin Milepoint	End Milepoint	Section Length (miles)	2040 ADT	K-Factor	2040 DHV	Posted Speed Limit (mph)	% Trucks and Buses	Estimated Travel Speed (MPH)	% Time Spent Following	Density (pc/mi/ln)	LOS
Wildwood Road	1	E. Broadway/Old Knoxville Hwy (SR 33) MP 0.000	Reservoir Rd MP 1.309	1.31	7,640	0.110	840	45	2.0%	30.0	74.1	N/A	C
	2	Reservoir Rd MP 1.309	Sam Houston School Rd MP 2.650	1.34	17,870	0.110	1966	45	2.0%	21.6	94.4	N/A	E
	3	Sam Houston School Rd MP 2.650	End of Study Area MP 4.740	2.09	7,390	0.110	813	45	2.0%	30.2	74.2	N/A	C
Pellissippi Parkway	1	Topside Rd MP 0.810	Alcoa Hwy (SR 115/US 129) MP 2.240	1.43	67,480	0.120	8098	60	7.0%	45.7	N/A	54.3	F
	2	Alcoa Hwy (SR 115/US 129) MP 2.240	Relocated Alcoa Highway MP 3.240	1.00	40,850	0.120	4902	60	5.0%	60.0	N/A	24.4	C
	3	Relocated Alcoa Highway MP 3.240	E. Broadway/Old Knoxville Hwy (SR 33) MP 4.710	1.47	34,320	0.130	4462	60	5.0%	60.0	N/A	22.2	C
Lamar Alexander Parkway (SR 73 / US 321)	3	E. Broadway/Old Knoxville Hwy (SR 33) MP 11.650	Jones Ave MP 12.526	0.87	38,020	0.100	3802	40	7.0%				
	4	Jones Ave MP 12.520	Merritt Rd MP 13.980	1.46	39,020	0.100	3902	50	4.0%	49.7	N/A	30.0	D
	5	Merritt Rd MP 13.980	Tuckaleechee Pk MP 17.020	3.04	33,860	0.100	3386	50	4.0%	50.0	N/A	24.3	C
	6	Tuckaleechee Pk MP 17.020	Tuckaleechee Pk MP 17.320	0.30	33,110	0.100	3311	55	5.0%	55.0	N/A	20.1	C
	7	Tuckaleechee Pk MP 17.320	Melrose Station Rd MP 20.020	2.70	23,860	0.100	2386	55	5.0%	55.0	N/A	14.5	B
	8	Melrose Station Rd MP 20.020	Foothills Pkwy MP 22.400	2.38	11,650	0.100	1165	55	5.0%	55.0	N/A	7.1	A
Hall Road (SR 35)	1	Alcoa Hwy (SR 115/US 129) MP 0.000	Bessemer St MP 1.520	1.52	35,370	0.110	3891	45	2.0%	45.0	N/A	27.7	D
	2	Bessemer St MP 1.520	E. Broadway/Old Knoxville Hwy (SR 33) MP 2.590	1.07	32,530	0.100	3253	35	2.0%				
Washington Street (SR 35)	1	E. Broadway/Old Knoxville Hwy (SR 33) MP 2.590	US 411 (SR 35) MP 2.820	0.23	29,900	0.100	2990	30	3.0%				
	2	US 411 (SR 35) MP 0.000	Lamar Alexander Pkwy (SR 73/US 321) MP 0.160	0.16	25,570	0.100	2557	30	2.0%				
US 411 (SR 35)	1	Washington St (SR 35) MP 2.820	S. Everett High Rd MP 3.690	0.87	15,400	0.100	1540	40	3.0%				
	2	S. Everett High Rd MP 3.690	Westfield Dr 4.527	0.84	15,080	0.100	1508	45	4.0%	19.2	89.1	N/A	E
	3	Westfield Dr 4.527	Hitch Rd 7.254	2.73	14,140	0.110	1555	45	7.0%	21.1	89.2	N/A	E
	4	Hitch Rd 7.254	End of Study Area 7.990	0.74	15,670	0.110	1724	45	7.0%	19.9	91.3	N/A	E

Table 5: 2040 No-Build Corridor LOS (cont.)

Route	Section	Begin Milepoint	End Milepoint	Section Length (miles)	2040 ADT	K-Factor	2040 DHV	Posted Speed Limit (mph)	% Trucks and Buses	Estimated Travel Speed (MPH)	% Time Spent Following	Density (pc/mi/ln)	LOS
E. Broadway / Old Knoxville Highway (SR 33)	3	Hall Rd MP 12.340	Wildwood Rd MP 14.206	1.87	21,510	0.100	2151	30	2.0%				
	4	Wildwood Rd MP 14.206	Hunt Rd MP 15.470	1.26	19,470	0.100	1947	40	2.0%				
	5	Hunt Rd MP 15.470	Pellissippi Pky MP 15.920	0.45	36,330	0.110	3996	40	2.0%				
	6	Pellissippi Pky MP 15.920	Sam Houston School Rd MP 16.370	0.45	17,050	0.130	2217	40	2.0%				
	7	Sam Houston School Rd MP 16.370	County Line MP 20.660	4.29	11,940	0.140	1672	50	4.0%	29.3	91.4	N/A	E
Alcoa Highway (SR 115 / US 129)	3	Louisville Rd (MP 13.020)	Hall Rd (SR 35) MP 14.280	1.26	62,250	0.110	6848	55	10.0%	*	N/A	*	F
	4	Hall Rd (SR 35) MP 14.280	Hunt Rd MP 15.020	0.74	94,460	0.110	10391	55	8.0%	*	N/A	*	F
	5	Hunt Rd MP 15.020	Relocated Alcoa Hwy MP 16.000	0.98	97,820	0.110	10760	50	8.0%	*	N/A	*	F
	6	Relocated Alcoa Hwy MP 16.000	Pellissippi Pky MP 17.660	2.64	45,270	0.110	4980	50	8.0%	43.4	N/A	40.0	E
	7	Pellissippi Pky MP 17.660	County Line MP 20.400	2.74	35,820	0.110	3940	55	8.0%	50.0	N/A	25.0	C
Sam Houston	1	SR 33 MP 0.000	Wildwood Rd MP 2.650	2.65	5,030	0.160	805	45	2.0%	31.0	74.2	N/A	C
Peppermint Road	1	Wildwood Rd MP 0.000	Sevierville Rd MP 1.100	1.10	5,960	0.130	775	35	2.0%	26.1	72.1	N/A	D
Hitch Road	1	Sevierville Rd MP 1.202	Davis Ford Rd MP 0.000	1.20	2,450	0.150	368	25	1.0%	23.5	60.2	N/A	C
Helton Road	1	Davis Ford Rd MP 0.875	Lamar Alexander Pkwy MP 0.000	0.88	640	0.150	96	25	1.0%	27.7	39.9	N/A	A
Relocated Alcoa Highway	1	Alcoa Highway (SR 115 / US 129)	Pellissippi Pky	Not Determined	39,440	0.100	3944	55	8.0%	50.0	N/A	16.4	B
	2	Pellissippi Pky	Alcoa Highway (SR 115 / US 129)	Not Determined	36,390	0.100	3639	55	8.0%	50.0	N/A	15.1	B

Figure 3: 2013 Existing Corridor LOS

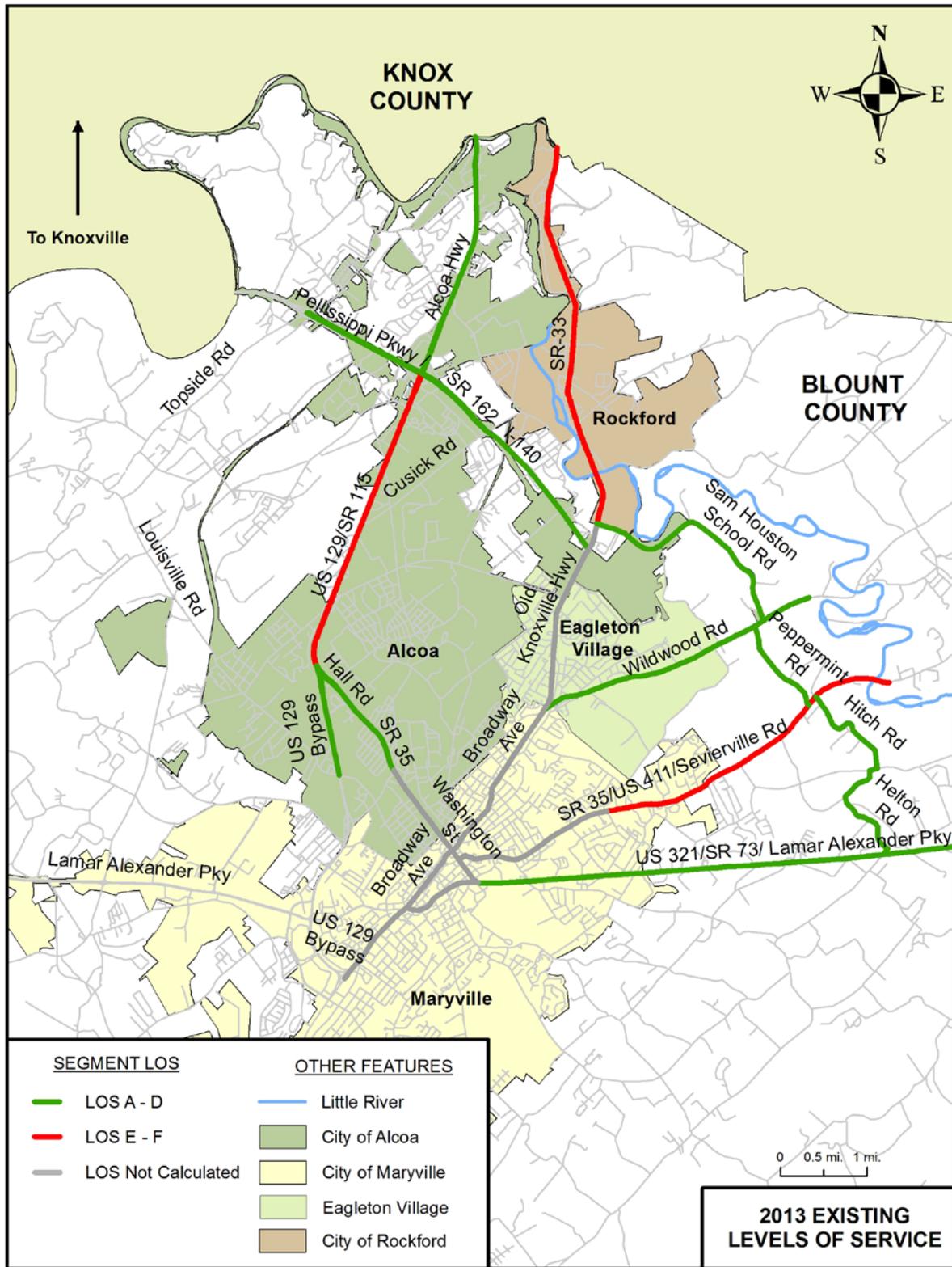


Figure 4: 2020 Corridor No-Build LOS

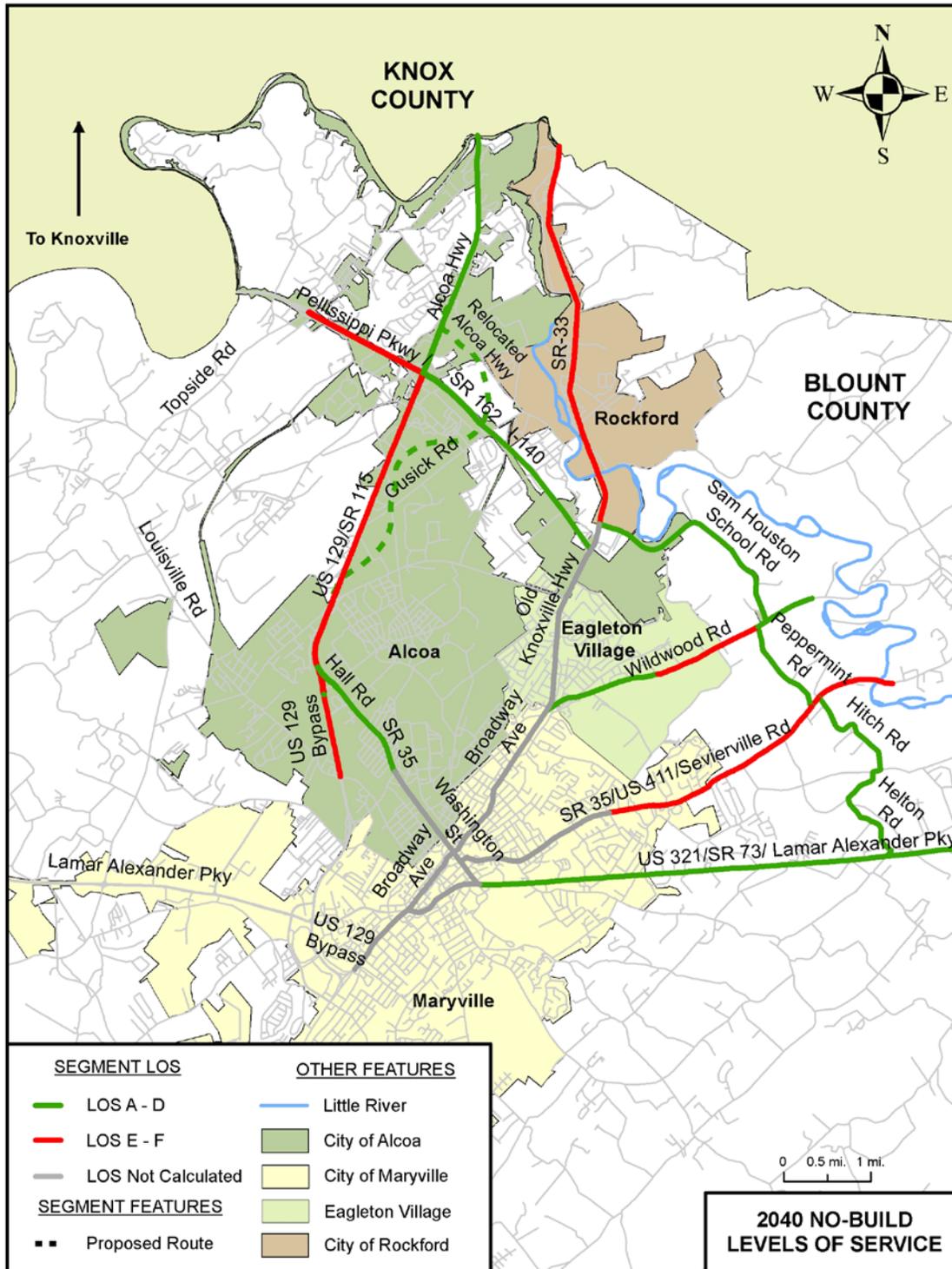
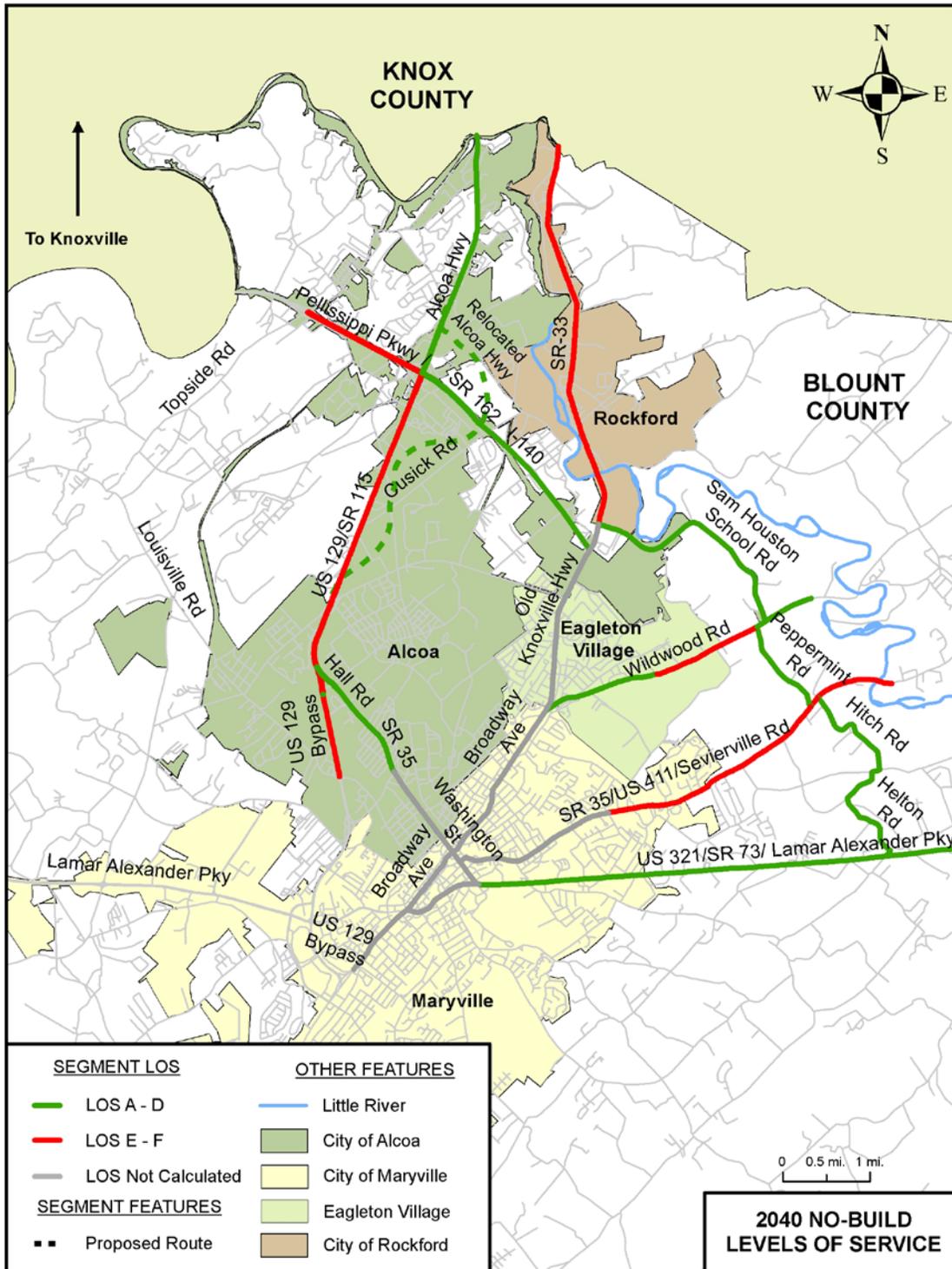


Figure 5: 2040 Corridor No-Build LOS



2.4 Preferred Alternative Corridor LOS Results

The forecasted Preferred Alternative traffic volumes (2020 and 2040) included as part of the updated 2013 *Traffic Forecast Study* prepared for this project by Sain Associates, Inc. were used to determine corridor LOS. The same methodology used for the No-Build analysis was also used in the analysis of the Preferred Alternative.

The following tables and figures, **Tables 6 – 7** and **Figures 6 – 7** show the resulting LOS for the Preferred Alternative.

Table 6: 2020 Preferred Alternative Corridor LOS

Route	Section	Begin Milepoint	End Milepoint	Section Length (miles)	2020 ADT	K-Factor	2020 DHV	Posted Speed Limit (mph)	% Trucks and Buses	Estimated Travel Speed (MPH)	% Time Spent Following	Density (pc/mi/ln)	LOS
Wildwood Road	1	E. Broadway/Old Knoxville Hwy (SR 33) MP 0.000	Reservoir Rd MP 1.309	1.31	3,680	0.110	405	45	2.0%	32.5	61.7	N/A	C
	2	Reservoir Rd MP 1.309	Sam Houston School Rd MP 2.650	1.34	4,500	0.110	495	45	2.0%	32.0	66.1	N/A	C
	3	Sam Houston School Rd MP 2.650	End of Study Area MP 4.740	2.09	3,020	0.110	332	45	2.0%	33.1	58.4	N/A	B
Pellissippi Parkway	1	Topside Rd MP 0.810	Alcoa Hwy (SR 115/US 129) MP 2.240	1.43	48,020	0.120	5762	60	7.0%	59.5	N/A	29.7	D
	2	Alcoa Hwy (SR 115/US 129) MP 2.240	Relocated Alcoa Highway MP 3.240	1.00	23,220	0.120	2786	60	5.0%	60.0	N/A	13.9	B
	3	Relocated Alcoa Highway MP 3.240	E. Broadway/Old Knoxville Hwy (SR 33) MP 4.710	1.47	25,400	0.130	3302	60	5.0%	60.0	N/A	16.4	B
	4	E. Broadway/Old Knoxville Hwy (SR 33) MP 4.710	US 411 (SR 35)	Not Determined	18,700	0.130	2431	60	2.0%	60.0	N/A	11.6	B
	5	US 411 (SR 35)	Lamar Alexander Pkwy (SR 73 / US 321)	Not Determined	18,220	0.130	2369	60	2.0%	60.0	N/A	11.3	B
Lamar Alexander Parkway (SR 73 / US 321)	3	E. Broadway/Old Knoxville Hwy (SR 33) MP 11.650	Jones Ave MP 12.526	0.87	26,600	0.100	2660	40	6.0%				
	4	Jones Ave MP 12.520	Merritt Rd MP 13.980	1.46	24,350	0.100	2435	50	3.0%	50.0	N/A	18.6	C
	5	Merritt Rd MP 13.980	Tuckaleechee Pk MP 17.020	3.04	19,050	0.100	1905	50	3.0%	50.0	N/A	13.7	B
	6	Tuckaleechee Pk MP 17.020	Tuckaleechee Pk MP 17.320	0.30	18,790	0.100	1879	55	4.0%	55.0	N/A	11.4	B
	7	Tuckaleechee Pk MP 17.320	Melrose Station Rd MP 20.020	2.70	18,570	0.100	1857	55	5.0%	55.0	N/A	11.3	B
	8	Melrose Station Rd MP 20.020	Foothills Pkwy MP 22.400	2.38	10,490	0.100	1049	55	5.0%	55.0	N/A	6.4	A
Hall Road (SR 35)	1	Alcoa Hwy (SR 115/US 129) MP 0.000	Bessemer St MP 1.520	1.52	22,010	0.110	2421	45	2.0%	45.0	N/A	17.2	B
	2	Bessemer St MP 1.520	E. Broadway/Old Knoxville Hwy (SR 33) MP 2.590	1.07	24,480	0.100	2448	35	2.0%				
Washington Street (SR 35)	1	E. Broadway/Old Knoxville Hwy (SR 33) MP 2.590	US 411 (SR 35) MP 2.820	0.23	21,950	0.100	2195	30	3.0%				
	2	US 411 (SR 35) MP 0.000	Lamar Alexander Pkwy (SR 73/US 321) MP 0.160	0.16	22,130	0.100	2213	30	2.0%				
US 411 (SR 35)	1	Washington St (SR 35) MP 2.820	S. Everett High Rd MP 3.690	0.87	12,190	0.100	1219	40	3.0%				
	2	S. Everett High Rd MP 3.690	Westfield Dr 4.527	0.84	9,680	0.100	968	45	3.0%	22.8	79.7	N/A	E
	3	Westfield Dr 4.527	Hitch Rd 7.254	2.73	9,680	0.110	1065	45	3.0%	24.6	82.0	N/A	E
	4	Hitch Rd 7.254	End of Study Area 7.990	0.74	10,700	0.110	1177	45	7.0%	23.9	84.0	N/A	E

Table 6: 2020 Preferred Alternative Corridor LOS (cont.)

Route	Section	Begin Milepoint	End Milepoint	Section Length (miles)	2020 ADT	K-Factor	2020 DHV	Posted Speed Limit (mph)	% Trucks and Buses	Estimated Travel Speed (MPH)	% Time Spent Following	Density (pc/mi/ln)	LOS
E. Broadway / Old Knoxville Highway (SR 33)	3	Hall Rd MP 12.340	Wildwood Rd MP 14.206	1.87	15,640	0.100	1564	30	3.0%				
	4	Wildwood Rd MP 14.206	Hunt Rd MP 15.470	1.26	14,640	0.100	1464	40	3.0%				
	5	Hunt Rd MP 15.470	Pellissippi Pky MP 15.920	0.45	20,500	0.110	2255	40	4.0%				
	6	Pellissippi Pky MP 15.920	Sam Houston School Rd MP 16.370	0.45	13,880	0.130	1804	40	2.0%				
	7	Sam Houston School Rd MP 16.370	County Line MP 20.660	4.29	13,880	0.140	1943	50	2.0%	28.6	93.5	N/A	E
Alcoa Highway (SR 115 / US 129)	3	Louisville Rd (MP 13.020)	Hall Rd (SR 35) MP 14.280	1.26	43,300	0.110	4763	55	8.0%	53.7	N/A	31.7	D
	4	Hall Rd (SR 35) MP 14.280	Hunt Rd MP 15.020	0.74	62,650	0.110	6892	55	8.0%	*	N/A	*	F
	5	Hunt Rd MP 15.020	Relocated Alcoa Hwy MP 16.000	0.98	63,370	0.110	6971	50	8.0%	*	N/A	*	F
	6	Relocated Alcoa Hwy MP 16.000	Pellissippi Pky MP 17.660	2.64	54,300	0.110	5973	50	8.0%	*	N/A	*	F
	7	Pellissippi Pky MP 17.660	County Line MP 20.400	2.74	41,740	0.110	4591	55	8.0%	49.8	N/A	29.2	D
Sam Houston	1	SR 33 MP 0.000	Wildwood Rd MP 2.650	2.65	-	0.160	-	-	-	-	-	-	-
Peppermint Road	1	Wildwood Rd MP 0.000	Sevierville Rd MP 1.100	1.10	-	0.130	-	-	-	-	-	-	-
Hitch Road	1	Sevierville Rd MP 1.202	Davis Ford Rd MP 0.000	1.20	-	0.150	-	-	-	-	-	-	-
Helton Road	1	Davis Ford Rd MP 0.875	Lamar Alexander Pkwy MP 0.000	0.88	-	0.150	-	-	-	-	-	-	-
Relocated Alcoa Highway	1	Alcoa Highway (SR 115 / US 129)	Pellissippi Pky	Not Determined	27,190	0.100	2719	55	8.0%	50.0	N/A	11.3	B
	2	Pellissippi Pky	Alcoa Highway (SR 115 / US 129)	Not Determined	28,430	0.100	2843	55	8.0%	50.0	N/A	11.8	B

Table 7: 2040 Preferred Alternative Corridor LOS

Route	Section	Begin Milepoint	End Milepoint	Section Length (miles)	2040 ADT	K-Factor	2040 DHV	Posted Speed Limit (mph)	% Trucks and Buses	Estimated Travel Speed (MPH)	% Time Spent Following	Density (pc/mi/ln)	LOS
Wildwood Road	1	E. Broadway/Old Knoxville Hwy (SR 33) MP 0.000	Reservoir Rd MP 1.309	1.31	7,180	0.110	790	45	2.0%	30.3	73.9	N/A	C
	2	Reservoir Rd MP 1.309	Sam Houston School Rd MP 2.650	1.34	7,630	0.110	839	45	2.0%	30.0	74.1	N/A	C
	3	Sam Houston School Rd MP 2.650	End of Study Area MP 4.740	2.09	6,600	0.110	726	45	2.0%	30.7	71.9	N/A	C
Pellissippi Parkway	1	Topside Rd MP 0.810	Alcoa Hwy (SR 115/US 129) MP 2.240	1.43	73,980	0.120	8878	60	7.0%	37.0	N/A	73.6	F
	2	Alcoa Hwy (SR 115/US 129) MP 2.240	Relocated Alcoa Highway MP 3.240	1.00	51,750	0.120	6210	60	5.0%	58.8	N/A	31.5	D
	3	Relocated Alcoa Highway MP 3.240	E. Broadway/Old Knoxville Hwy (SR 33) MP 4.710	1.47	55,330	0.130	7193	60	5.0%	54.5	N/A	39.4	E
	4	E. Broadway/Old Knoxville Hwy (SR 33) MP 4.710	US 411 (SR 35)	Not Determined	38,040	0.130	4945	60	2.0%	60.0	N/A	23.6	C
	5	US 411 (SR 35)	Lamar Alexander Pkwy (SR 73 / US 321)	Not Determined	25,240	0.130	3281	60	2.0%	60.0	N/A	15.6	B
Lamar Alexander Parkway (SR 73 / US 321)	3	E. Broadway/Old Knoxville Hwy (SR 33) MP 11.650	Jones Ave MP 12.526	0.87	32,580	0.100	3258	40	6.0%				
	4	Jones Ave MP 12.520	Merritt Rd MP 13.980	1.46	30,680	0.100	3068	50	3.0%	50.0	N/A	23.5	C
	5	Merritt Rd MP 13.980	Tuckaleechee Pk MP 17.020	3.04	28,120	0.100	2812	50	3.0%	50.0	N/A	20.2	C
	6	Tuckaleechee Pk MP 17.020	Tuckaleechee Pk MP 17.320	0.30	37,420	0.100	3742	55	4.0%	55.0	N/A	22.7	C
	7	Tuckaleechee Pk MP 17.320	Melrose Station Rd MP 20.020	2.70	28,160	0.100	2816	55	5.0%	55.0	N/A	17.1	B
	8	Melrose Station Rd MP 20.020	Foothills Pkwy MP 22.400	2.38	12,970	0.100	1297	55	5.0%	55.0	N/A	7.9	A
Hall Road (SR 35)	1	Alcoa Hwy (SR 115/US 129) MP 0.000	Bessemer St MP 1.520	1.52	31,200	0.110	3432	45	2.0%	45.0	N/A	24.4	C
	2	Bessemer St MP 1.520	E. Broadway/Old Knoxville Hwy (SR 33) MP 2.590	1.07	23,930	0.100	2393	35	2.0%				
Washington Street (SR 35)	1	E. Broadway/Old Knoxville Hwy (SR 33) MP 2.590	US 411 (SR 35) MP 2.820	0.23	20,130	0.100	2013	30	3.0%				
	2	US 411 (SR 35) MP 0.000	Lamar Alexander Pkwy (SR 73/US 321) MP 0.160	0.16	18,630	0.100	1863	30	2.0%				
US 411 (SR 35)	1	Washington St (SR 35) MP 2.820	S. Everett High Rd MP 3.690	0.87	13,780	0.100	1378	40	3.0%				
	2	S. Everett High Rd MP 3.690	Westfield Dr 4.527	0.84	14,800	0.100	1480	45	3.0%	19.4	88.6	N/A	E
	3	Westfield Dr 4.527	Hitch Rd 7.254	2.73	14,800	0.110	1628	45	3.0%	20.6	90.6	N/A	E
	4	Hitch Rd 7.254	End of Study Area 7.990	0.74	19,800	0.110	2178	45	7.0%	16.3	95.9	N/A	E

Table 7: 2040 Preferred Alternative Corridor LOS (cont.)

Route	Section	Begin Milepoint	End Milepoint	Section Length (miles)	2040 ADT	K-Factor	2040 DHV	Posted Speed Limit (mph)	% Trucks and Buses	Estimated Travel Speed (MPH)	% Time Spent Following	Density (pc/mi/ln)	LOS
E. Broadway / Old Knoxville Highway (SR 33)	3	Hall Rd MP 12.340	Wildwood Rd MP 14.206	1.87	19,130	0.100	1913	30	3.0%				
	4	Wildwood Rd MP 14.206	Hunt Rd MP 15.470	1.26	17,210	0.100	1721	40	3.0%				
	5	Hunt Rd MP 15.470	Pellissippi Pky MP 15.920	0.45	36,130	0.110	3974	40	4.0%				
	6	Pellissippi Pky MP 15.920	Sam Houston School Rd MP 16.370	0.45	19,240	0.130	2501	40	2.0%				
	7	Sam Houston School Rd MP 16.370	County Line MP 20.660	4.29	19,240	0.140	2694	50	2.0%	21.2	100.0	N/A	F
Alcoa Highway (SR 115 / US 129)	3	Louisville Rd (MP 13.020)	Hall Rd (SR 35) MP 14.280	1.26	61,380	0.110	6752	55	8.0%	*	N/A	*	F
	4	Hall Rd (SR 35) MP 14.280	Hunt Rd MP 15.020	0.74	88,800	0.110	9768	55	8.0%	*	N/A	*	F
	5	Hunt Rd MP 15.020	Relocated Alcoa Hwy MP 16.000	0.98	92,470	0.110	10172	50	8.0%	*	N/A	*	F
	6	Relocated Alcoa Hwy MP 16.000	Pellissippi Pky MP 17.660	2.64	44,950	0.110	4945	50	8.0%	43.4	N/A	39.6	E
	7	Pellissippi Pky MP 17.660	County Line MP 20.400	2.74	37,100	0.110	4081	55	8.0%	50.0	N/A	25.9	C
Sam Houston	1	SR 33 MP 0.000	Wildwood Rd MP 2.650	2.65	-	0.160	-	-	-	-	-	-	-
Peppermint Road	1	Wildwood Rd MP 0.000	Sevierville Rd MP 1.100	1.10	-	0.130	-	-	-	-	-	-	-
Hitch Road	1	Sevierville Rd MP 1.202	Davis Ford Rd MP 0.000	1.20	-	0.150	-	-	-	-	-	-	-
Helton Road	1	Davis Ford Rd MP 0.875	Lamar Alexander Pkwy MP 0.000	0.88	-	0.150	-	-	-	-	-	-	-
Relocated Alcoa Highway	1	Alcoa Highway (SR 115 / US 129)	Pellissippi Pky	Not Determined	37,520	0.100	3752	55	8.0%	50.0	N/A	15.6	B
	2	Pellissippi Pky	Alcoa Highway (SR 115 / US 129)	Not Determined	39,230	0.100	3923	55	8.0%	50.0	N/A	16.3	B

Figure 6: 2020 Preferred Alternative Corridor LOS

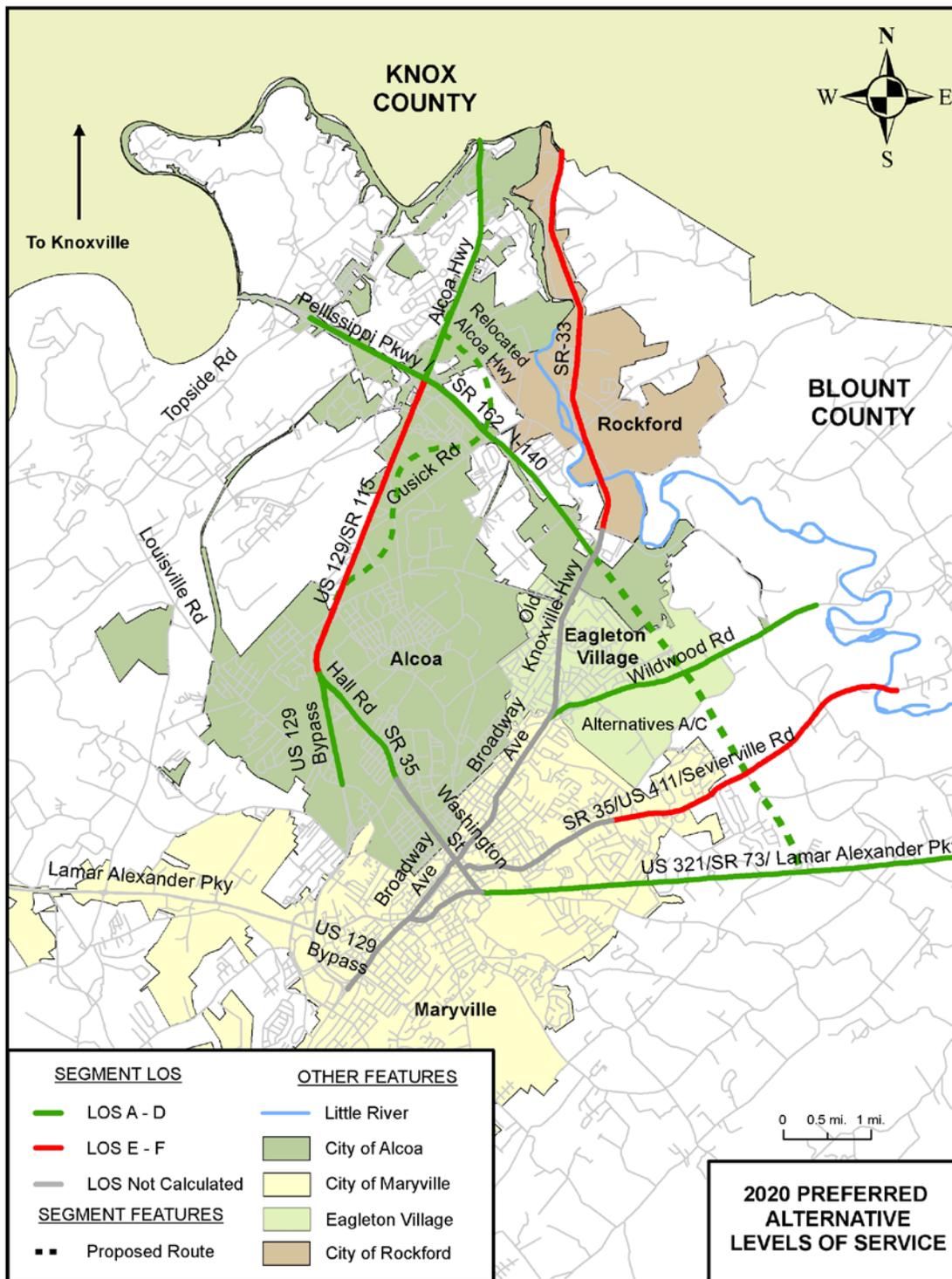
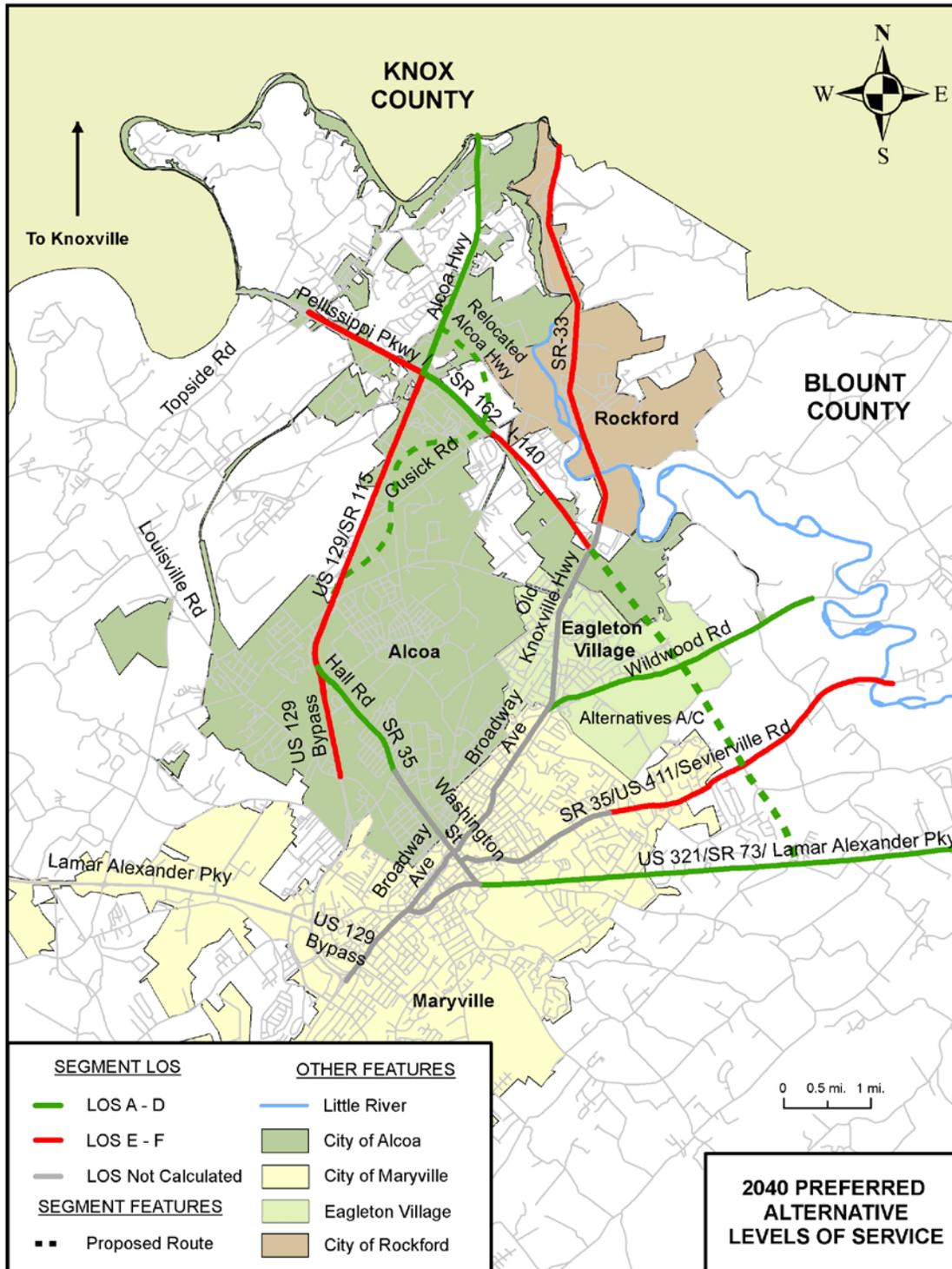


Figure 7: 2040 Preferred Alternative Corridor LOS



2.5 Summary of Corridor LOS Results

The following tables present a comparative summary of the No-Build and Preferred Alternative. **Table 8** lists the LOS for the Preferred Alternative compared to the No-Build Alternative. **Table 9** lists the corresponding LOS for the other study area roadways for the No-Build Alternative as well as the Preferred Alternative.

Table 8: Basic Freeway Corridor LOS Summary

Route	Section	Begin Milepoint	End Milepoint	2013 Existing	2020 No-Build	2040 No-Build	2020 Preferred Alternative	2040 Preferred Alternative
Pellissippi Parkway	1	Topside Rd	Alcoa Hwy (SR 115/US 129)	C	D	F	D	F
	2	Alcoa Hwy (SR 115/US 129)	Relocated Alcoa Hwy	A	B	C	B	D
	3	Relocated Alcoa Hwy	E. Broadway / Old Knoxville Hwy (SR 33)	A	B	C	B	E
	4	E. Broadway/Old Knoxville Hwy (SR 33)	US 411 (SR 35)	N/A	N/A	N/A	B	C
	5	US 411 (SR 35)	Lamar Alexander Pkwy (SR 73/US 321)	N/A	N/A	N/A	B	B

Table 9: Study Area Highways Corridor LOS Summary

Route	Section	Begin Milepoint	End Milepoint	2013 Existing	2020 No-Build	2040 No-Build	2020 Preferred Alternative	2040 Preferred Alternative
Wildwood Road	1	E. Broadway / Old Knoxville Hwy (SR 33)	Reservoir Rd	B	C	C	C	C
	2	Reservoir Rd	Sam Houston School Rd	B	C	E	C	C
	3	Sam Houston School Rd	End of Study Area	A	B	C	B	C
Lamar Alexander Parkway (SR 73 / US 321)	3	E. Broadway / Old Knoxville Hwy (SR 33)	Jones Ave					
	4	Jones Ave	Meritt Rd	B	C	D	C	C
	5	Meritt Rd	Tuckaleechee Pk	B	B	C	B	C
	6	Tuckaleechee Pk	Tuckaleechee Pk	A	B	C	B	D
	7	Tuckaleechee Pk	Melrose Station Rd	A	A	B	B	B
	8	Melrose Station Rd	Foothills Pkwy	A	A	A	A	A
Hall Road (SR 35)	1	Alcoa Hwy (SR 115 / US 129)	Bessemer St	B	B	D	B	C
	2	Bessemer St	E. Broadway / Old Knoxville Hwy (SR 33)					
Washington Street (SR 35)	1	E. Broadway / Old Knoxville Hwy (SR 33)	US 411 (SR 35)					
	2	US 411 (SR 35)	Lamar Alexander Pkwy (SR 73 / US 321)					
US 411 (SR 35)	1	Washington St (SR 35)	S. Everett High Rd					
	2	S. Everett High Rd	Westfield Dr	E	E	E	E	E
	3	Westfield Dr	Hitch Rd	E	E	E	E	E
	4	Hitch Rd	End of Study Area	E	E	E	E	E
E. Broadway / Old Knoxville Highway (SR 33)	3	Hall Rd	Wildwood Rd					
	4	Wildwood Rd	Hunt Rd					
	5	Hunt Rd	Pellissippi Pkwy					
	6	Pellissippi Pkwy	Sam Houston School Rd					
	7	Sam Houston School Rd	County Line	E	E	E	E	F
Alcoa Highway (SR 115 / US 129)	3	Louisville Rd	Hall Rd (SR 35)	D	D	F	D	F
	4	Hall Rd (SR 35)	Hunt Rd	E	F	F	F	F
	5	Hunt Rd	Cusick Rd	F	F	F	F	F
	6	Cusick Rd	Pellissippi Pkwy	F	F	E	F	E
	7	Pellissippi Pkwy	County Line	D	D	C	D	C
Relocated Alcoa Highway	1	Alcoa Hwy (SR 115 / US 129)	Pellissippi Pky	Not Determined	B	B	B	B
	2	Pellissippi Pky	Alcoa Highway (SR 115 / US 129)	Not Determined	B	B	B	B

The following observations are made regarding the analysis provided in the previous tables:

- Under all scenarios, traffic operations remain generally at an acceptable LOS (LOS D or better) on Lamar Alexander Parkway (US 321/SR 73) through 2040.
- Alcoa Highway (SR 115/US 129) operates at poor traffic conditions (worse than LOS D) under all scenarios.
- Wildwood Road declines to LOS E (poor) under 2040 No-Build conditions; under the 2040 Preferred Alternative it will operate at LOS C (acceptable).
- Traffic operations decline on existing Pellissippi Parkway to below a desirable LOS just west of Alcoa Highway for both the Build and No-Build Alternatives for the year 2040. Between the Relocated Alcoa Highway and SR 33 in the year 2040 the LOS declines to LOS E for the Preferred (Build) Alternative only.
- Relocated Alcoa Highway operates at acceptable traffic levels under all scenarios.
- The proposed sections of Pellissippi Parkway from SR 33 to SR 73 / US 321 operate at an acceptable level through the analysis year 2040.

3.0 INTERSECTION LOS ANALYSIS

An intersection LOS analysis was conducted for the No-Build Alternative and Preferred Alternative for the years 2020 and 2040 along with the Existing (2013) for comparison purposes. The methodology and results are presented in the following sections.

3.1 Study Area Intersections

A list of major study area intersections are noted below. For this update, as indicated, several intersections were removed from the analysis as during the traffic forecasting stage they were determined to not be influenced by the Pellissippi Parkway Extension.

1. SR 115 / US 129 @ I-140 / Pellissippi Parkway (Interchange – two STOP Controlled Ramp Terminals)
2. SR 115 / US 129 @ SR 35 (Interchange – STOP Controlled Ramp Terminals)
3. SR 115 / US 129 @ SR 73 / US 321 (Signalized) - Removed
4. SR 33 / US 411 @ SR 15 / US 129 (Interchange - two STOP Controlled Ramp Terminals) - Removed
5. SR 33 @ I-140 / Pellissippi Parkway (STOP Controlled)
6. SR 33 @ Wildwood Road (Signalized)
7. SR 33 / E. Broadway Avenue @ SR 35 / S. Washington Street (Signalized)
8. SR 33 @ SR 73 / US 321 (Signalized) - Removed
9. SR 35 / S. Washington Street @ Sevierville Road (Signalized)
10. S. Washington Street / SR 35 @ High Street / SR 35 (Signalized)
11. S. Washington Street @ SR 73 / US 321 (Signalized)
12. SR 73 / US 321 @ SR 335 / Old Glory Road (Signalized) - Removed

The existing ramp terminal intersections that currently operate without signal control were not initially evaluated as part of the LOS analysis (Intersections 1 and 2 above). The highway segments surrounding the interchanges were evaluated as part of the previous segment analysis.

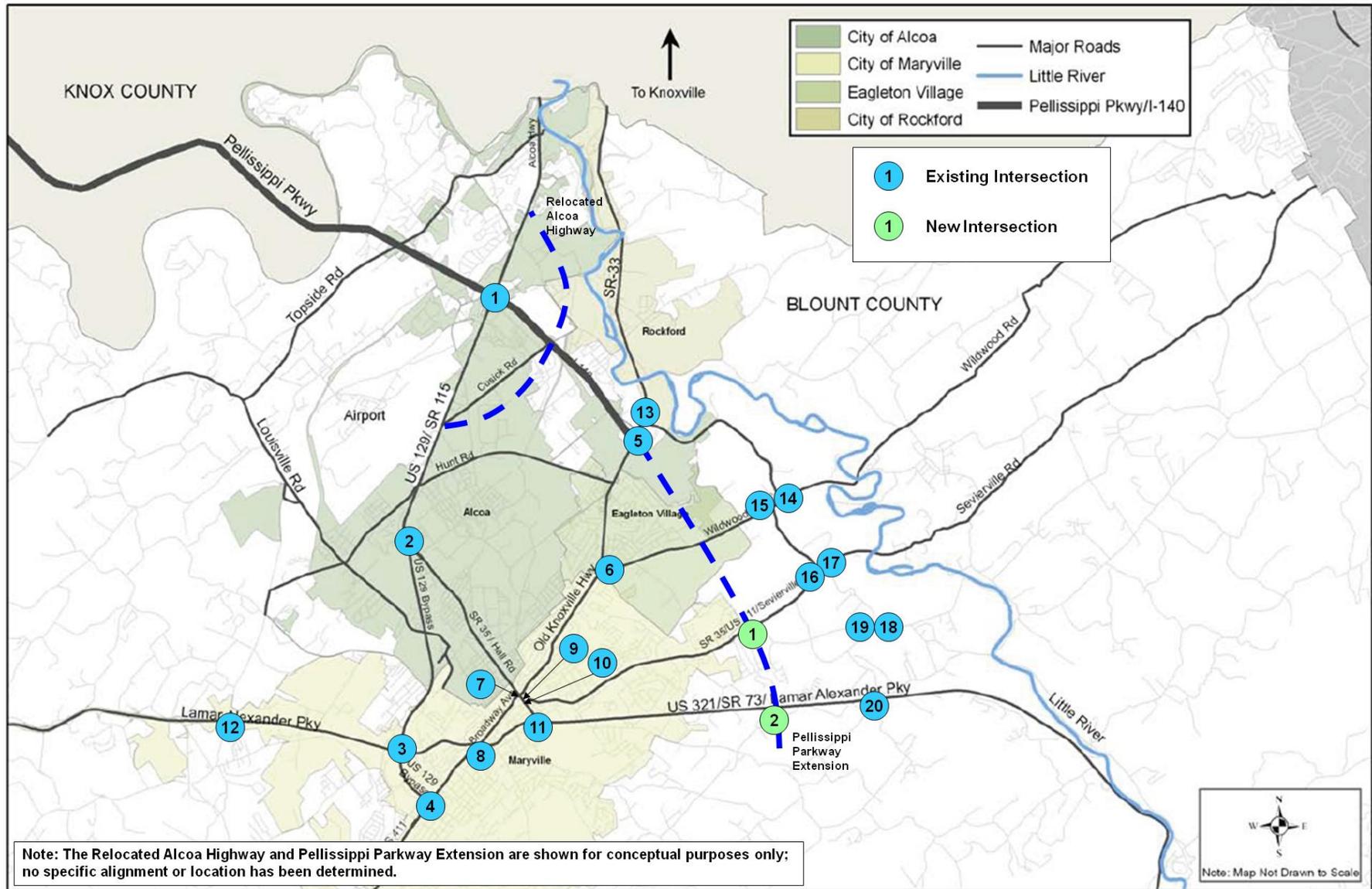
TDOT provided Signing and Striping design plans for proposed improvements to SR 33, which include changes to the configuration of the SR 33 and Pellissippi Parkway intersections. The layouts proposed were used for the future analysis years 2020 and 2040 for the No-Build scenarios. The Preferred Alternative considers some modifications to the ramp terminal intersections for SR 33 and Pellissippi Parkway which includes the additional ramps leading to the extension.

SR 33 at Wildwood Road was originally evaluated as a signalized intersection. Following the previous traffic analysis, the intersection has been re-routed and now follows a portion of Horn Street and is considered a STOP controlled intersection for this analysis.

In addition, two new intersections would be created by the proposed Pellissippi Parkway Extension. **Figure 8** shows the location of each new intersection in a green circle, indicated by number as shown below.

1. Pellissippi Parkway Extension @ SR 35 / US 411 / Sevierville Road (Interchange – two Signalized Ramp Terminal intersections)
2. Pellissippi Parkway Extension @ US 321 (Interchange – loop ramps, i.e., no intersections)

Figure 8: Intersection Location Map



For this analysis, a typical diamond interchange has been assumed for the Pellissippi Parkway Extension at SR 35 / US 411 / Sevierville Road interchange (Site 1 depicted in the green circle), resulting in the creation of two new intersections. LOS and delay were calculated for the same scenarios as discussed above for the SR 33 / I-140 interchange. The Pellissippi Parkway Extension at US 321 may include directional loop ramps and was not evaluated at this time.

Several additional intersections would be impacted by the proposed Preferred Alternative and were included in the current analysis. The following intersections were evaluated for the existing, No-Build and Preferred Alternative Scenarios. **Figure 8** shows the location of each intersection in a blue circle, indicated by number as shown below:

- 13. SR 33 @ Sam Houston School Road (Signalized)
- 14. Sam Houston School Road @ Wildwood Road (STOP Controlled)
- 15. Peppermint Road @ Wildwood Road (STOP Controlled)
- 16. SR 35 / US 411 / Sevierville Road @ Peppermint Road (STOP Controlled)
- 17. SR 35 / US 411 / Sevierville Road @ Hitch Road / Peppermint Hills Drive (STOP Controlled)
- 18. Davis Ford Road @ Helton Road (STOP Controlled)
- 19. Davis Ford Road @ Hitch Road (STOP Controlled)
- 20. SR 73 / US 321 @ Helton Road / Tuckaleechee Pike (STOP Controlled)

3.2 Methodology

For this analysis, HCS 2010 was used to analyze the AM and PM peak hour traffic operating conditions. This software package implements the HCM 2010 intersection analysis methodology to compute LOS. For each study intersection, average vehicle delays were calculated to determine the resulting LOS. For intersections, the HCM 2010 defines LOS based on the average delay due to signal or STOP control as shown in **Table 10**.

Table 10: LOS Criteria for Intersections

LOS	Signalized Intersections Control Delay (seconds per vehicle)	Unsignalized Intersections Control Delay (seconds per vehicle)
A	≤ 10	≤ 10
B	>10 – 20	>10 – 15
C	>20 – 35	>15 – 25
D	>35 – 55	>25 – 35
E	>55 – 80	>35 – 50
F	>80	>50

Source: Highway Capacity Manual 2010

In general terms, a facility is considered to have reached its physical capacity at LOS E. TDOT typically uses LOS D as the threshold for acceptable traffic service for all but the more rural roads. Because of the urban character of the study area, LOS D is used as the threshold. Operations below this threshold are noted as undesirable and warrant improvement. LOS D corresponds to ≤ 55 seconds of delay per vehicle at a signalized intersection and ≤ 35 seconds of delay at an unsignalized intersection. Refer to the Chapters 18 & 19, Volume 3 of HCM 2010 for more details.

3.3 Intersection LOS Results

Turning movement volumes for the AM and PM peak hours were provided in the updated 2013 *Traffic Forecast Study*. Using these volumes, intersection LOS was developed for the existing (2013), 2020 and 2040 No-Build, and the 2020 and 2040 Preferred Alternative scenarios.

Optimized signal timings were assumed for all future analysis years for the signalized intersections.

It should be noted that since the previous iteration of this traffic analysis addendum / memorandum, the Highway Capacity Manual and Software were updated. The changes were substantial enough between versions such that direct comparisons should not be made between previous values and those provided in this update.

Tables 11 through **19** show the intersection LOS for each scenario.

Table 11: 2013 Existing Intersection LOS

Intersection	Type	Approach	AM Peak Hour	LOS	PM Peak Hour	LOS
			Avg. Delay (sec)		Avg. Delay (sec)	
5: SR 33 @ I-140 Off-Ramp	STOP Controlled	Eastbound	17.8	C	70.1	F
		Northbound	-	-	-	-
		Southbound	-	-	-	-
5: SR 33 @ I-140 On-Ramp	STOP Controlled	Eastbound	-	-	-	-
		Northbound	62.6	F	19.1	C
		Southbound	-	-	-	-
4: SR 33 @ Wildwood (Horn) Road	STOP Controlled	Westbound	26.4	D	50.9	F
		Northbound	-	-	-	-
		Southbound	8.8	A	9.9	A
7: SR 33 / E. Broadway Avenue @ SR 35 / S. Washington Street	Signalized	Eastbound	34.4	C	112.9	F
		Westbound	34.1	C	132.6	F
		Northbound	38.9	D	89.6	F
		Southbound	24.6	C	29.4	C
		Whole Int.	32.6	C	70.5	E
9: SR 35 / S. Washington Street @ Sevierville Road	Signalized	Eastbound	38.5	D	45.0	D
		Westbound	39.5	D	47.2	D
		Northbound	12.5	B	19.5	B
		Southbound	10.7	B	21.7	C
		Whole Int.	14.6	B	24.0	C
10: S. Washington Street / SR 35 @ High Street / SR 35	Signalized	Eastbound	42.3	D	50.3	D
		Westbound	37.9	D	45.6	D
		Northbound	27.2	C	39.6	D
		Southbound	21.6	C	26.4	C
		Whole Int.	27.9	C	34.5	C
11: S. Washington Street @ SR 73 / US 321	Signalized	Eastbound	278.7	F	465.1	F
		Westbound	56.9	E	52.6	D
		Northbound	31.7	C	161.6	F
		Southbound	114.7	F	265.4	F
		Whole Int.	135.8	F	275.9	F

Table 11: 2013 Existing Intersection LOS (cont.)

Intersection	Type	Approach	AM Peak Hour	LOS	PM Peak Hour	LOS
			Avg. Delay (sec)		Avg. Delay (sec)	
13: SR 33 @ Sam Houston School Road	Signalized	Westbound	21.3	C	21.3	C
		Northbound	20.1	C	20.1	C
		Southbound	15.9	B	15.9	B
		Whole Int.	19.5	B	19.5	B
14: Sam Houston School Road @ Wildwood Road	STOP Controlled	Eastbound	9.0	A	7.7	A
		Westbound	-	-	-	-
		Southbound	12.9	B	12.3	B
15: Peppermint Road @ Wildwood Road	STOP Controlled	Eastbound	-	-	-	-
		Westbound	7.8	A	8.2	A
		Northbound	12.7	B	13.5	B
16: SR 35 / US 411 / Sevierville Road @ Peppermint Road	STOP Controlled	Eastbound	9.0	A	8.1	A
		Westbound	-	-	-	-
		Southbound	21.5	C	22.2	C
17: SR 35 / US 411 / Sevierville Road @ Hitch Road / Peppermint Hills Drive	STOP Controlled	Eastbound	8.3	A	7.8	A
		Westbound	7.9	A	8.5	A
		Northbound	20.1	C	17.1	C
		Southbound	11.4	B	12.4	B
18: Davis Ford Road @ Hitch Road	STOP Controlled	Eastbound	7.5	A	7.4	A
		Westbound	-	-	-	-
		Southbound	10.1	B	9.6	A
19: Davis Ford Road @ Helton Road	STOP Controlled	Eastbound	-	-	-	-
		Westbound	7.3	A	7.3	A
		Northbound	8.7	A	8.6	A
20: SR 73 / US 321 @ Helton Road / Tuckaleechee Pike	STOP Controlled	Eastbound	11.3	B	9.2	A
		Westbound	9.6	A	10.7	B
		Northbound	16.3	C	17.3	C
		Southbound	89.9	F	32.3	D

Table 12: 2020 No-Build Intersection LOS

Intersection	Type	Approach	AM Peak Hour Avg. Delay (sec)	LOS	PM Peak Hour Avg. Delay (sec)	LOS
5: SR 33 @ I-140 Off-Ramp	STOP Controlled	Eastbound	42.3	E	317.3	F
		Northbound	-	-	-	-
		Southbound	-	-	-	-
5: SR 33 @ I-140 On-Ramp	STOP Controlled	Eastbound	-	-	-	-
		Northbound	215.0	F	44.4	E
		Southbound	-	-	-	-
4: SR 33 @ Wildwood (Horn) Road	STOP Controlled	Westbound	88.2	F	239.7	F
		Northbound	-	-	-	-
		Southbound	9.1	A	11.0	B
7: SR 33 / E. Broadway Avenue @ SR 35 / S. Washington Street	Signalized	Eastbound	41.8	D	199.9	F
		Westbound	41.5	D	188.5	F
		Northbound	41.0	D	113.5	F
		Southbound	25.5	C	29.3	C
		Whole Int.	35.8	D	95.5	F
9: SR 35 / S. Washington Street @ Sevierville Road	Signalized	Eastbound	38.6	D	44.8	D
		Westbound	39.0	D	46.8	D
		Northbound	13.4	B	21.4	C
		Southbound	11.5	B	25.1	C
		Whole Int.	15.4	B	26.4	C
10: S. Washington Street / SR 35 @ High Street / SR 35	Signalized	Eastbound	46.4	D	54.2	D
		Westbound	41.3	D	87.8	F
		Northbound	30.0	C	43.6	D
		Southbound	24.9	C	28.1	C
		Whole Int.	31.1	C	42.1	D
11: S. Washington Street @ SR 73 / US 321	Signalized	Eastbound	235.4	F	615.0	F
		Westbound	56.7	E	52.4	D
		Northbound	98.5	F	234.7	F
		Southbound	206.4	F	286.6	F
		Whole Int.	168.4	F	358.7	F

Table 12: 2020 No-Build Intersection LOS (cont.)

Intersection	Type	Approach	AM Peak Hour	LOS	PM Peak Hour	LOS
			Avg. Delay (sec)		Avg. Delay (sec)	
13: SR 33 @ Sam Houston School Road	Signalized	Westbound	25.2	C	31.8	C
		Northbound	27.6	C	11.6	B
		Southbound	19.3	B	5.1	A
		Whole Int.	24.4	C	11.6	B
14: Sam Houston School Road @ Wildwood Road	STOP Controlled	Eastbound	11.2	B	8.2	A
		Westbound	-	-	-	-
		Southbound	23.1	C	24.0	C
15: Peppermint Road @ Wildwood Road	STOP Controlled	Eastbound	-	-	-	-
		Westbound	8.3	A	9.5	A
		Northbound	46.2	E	62.1	F
16: SR 35 / US 411 / Sevierville Road @ Peppermint Road	STOP Controlled	Eastbound	9.9	A	8.4	A
		Westbound	-	-	-	-
		Southbound	55.7	F	71.7	F
17: SR 35 / US 411 / Sevierville Road @ Hitch Road / Peppermint Hills Drive	STOP Controlled	Eastbound	8.7	A	7.3	A
		Westbound	8.1	A	7.2	A
		Northbound	41.5	E	15.6	C
		Southbound	12.6	B	27.9	D
18: Davis Ford Road @ Hitch Road	STOP Controlled	Eastbound	7.6	A	7.5	A
		Westbound	-	-	-	-
		Southbound	10.8	B	10.0	B
19: Davis Ford Road @ Helton Road	STOP Controlled	Eastbound	-	-	-	-
		Westbound	7.4	A	7.3	A
		Northbound	8.8	A	8.6	A
20: SR 73 / US 321 @ Helton Road / Tuckaleechee Pike	STOP Controlled	Eastbound	13.6	B	10.1	A
		Westbound	10.8	B	13.0	B
		Northbound	44.0	E	29.3	D
		Southbound	630.7	F	74.2	F

Table 13: 2040 No-Build Intersection LOS

Intersection	Type	Approach	AM Peak Hour Avg. Delay (sec)	LOS	PM Peak Hour Avg. Delay (sec)	LOS
5: SR 33 @ I-140 Off-Ramp	STOP Controlled	Eastbound	730.0	F	2089.0	F
		Northbound	-	-	-	-
		Southbound	-	-	-	-
5: SR 33 @ I-140 On-Ramp	STOP Controlled	Eastbound	-	-	-	-
		Northbound	1375.0	F	741.9	F
		Southbound	-	-	-	-
4: SR 33 @ Wildwood (Horn) Road	STOP Controlled	Westbound	847.8	F	2782.0	F
		Northbound	-	-	-	-
		Southbound	10.0	B	16.0	C
7: SR 33 / E. Broadway Avenue @ SR 35 / S. Washington Street	Signalized	Eastbound	85.0	F	449.8	F
		Westbound	54.5	D	263.0	F
		Northbound	63.5	E	77.6	E
		Southbound	29.2	C	129.2	F
		Whole Int.	53.8	D	170.1	F
9: SR 35 / S. Washington Street @ Sevierville Road	Signalized	Eastbound	39.0	D	53.2	D
		Westbound	38.1	D	55.2	E
		Northbound	16.0	B	26.4	C
		Southbound	13.6	B	37.7	D
		Whole Int.	17.5	B	35.5	D
10: S. Washington Street / SR 35 @ High Street / SR 35	Signalized	Eastbound	50.2	D	158.5	F
		Westbound	83.5	F	176.8	F
		Northbound	48.7	D	52.5	D
		Southbound	23.4	C	48.1	D
		Whole Int.	46.0	D	74.8	E
11: S. Washington Street @ SR 73 / US 321	Signalized	Eastbound	430.6	F	892.6	F
		Westbound	51.7	D	56.8	E
		Northbound	276.7	F	345.8	F
		Southbound	373.3	F	542.4	F
		Whole Int.	350.0	F	571.3	F

Table 13: 2040 No-Build Intersection LOS (cont.)

Intersection	Type	Approach	AM Peak Hour Avg. Delay (sec)	LOS	PM Peak Hour Avg. Delay (sec)	LOS
13: SR 33 @ Sam Houston School Road	Signalized	Westbound	36.4	D	54.7	D
		Northbound	31.3	C	15.0	B
		Southbound	30.5	C	6.7	A
		Whole Int.	32.6	C	15.9	B
14: Sam Houston School Road @ Wildwood Road	STOP Controlled	Eastbound	80.0	F	10.5	B
		Westbound	-	-	-	-
		Southbound	174.2	F	940.3	F
15: Peppermint Road @ Wildwood Road	STOP Controlled	Eastbound	-	-	-	-
		Westbound	11.0	B	22.0	C
		Northbound	3226.0	F	9169.0	F
16: SR 35 / US 411 / Sevierville Road @ Peppermint Road	STOP Controlled	Eastbound	12.7	B	9.2	A
		Westbound	-	-	-	-
		Southbound	747.7	F	756.5	F
17: SR 35 / US 411 / Sevierville Road @ Hitch Road / Peppermint Hills Drive	STOP Controlled	Eastbound	9.6	A	8.5	A
		Westbound	8.6	A	10.4	B
		Northbound	497.6	F	93.8	F
		Southbound	17.1	C	22.3	C
18: Davis Ford Road @ Hitch Road	STOP Controlled	Eastbound	7.7	A	7.6	A
		Westbound	-	-	-	-
		Southbound	12.9	B	11.2	B
19: Davis Ford Road @ Helton Road	STOP Controlled	Eastbound	-	-	-	-
		Westbound	7.5	A	7.4	A
		Northbound	9.1	A	8.8	A
20: SR 73 / US 321 @ Helton Road / Tuckaleechee Pike	STOP Controlled	Eastbound	21.5	C	12.5	B
		Westbound	15.4	C	24.3	C
		Northbound	1799.0	F	781.3	F
		Southbound	*	F	599.5	F

*Delay too high to calculate

Table 14: 2020 Preferred Alternative Intersection LOS

Intersection	Type	Approach	AM Peak Hour	LOS	PM Peak Hour	LOS
			Avg. Delay (sec)		Avg. Delay (sec)	
4: SR 33 @ Wildwood (Horn) Road	STOP Controlled	Westbound	56.3	F	136.0	F
		Northbound	-	-	-	-
		Southbound	8.9	A	10.6	B
7: SR 33 / E. Broadway Avenue @ SR 35 / S. Washington Street	Signalized	Eastbound	39.1	D	50.4	D
		Westbound	39.9	D	46.1	D
		Northbound	28.8	C	70.7	E
		Southbound	20.8	C	43.5	D
		Whole Int.	29.0	C	52.6	D
9: SR 35 / S. Washington Street @ Sevierville Road	Signalized	Eastbound	38.6	D	45.1	D
		Westbound	39.4	D	47.2	D
		Northbound	12.6	B	19.6	B
		Southbound	10.8	B	21.5	C
		Whole Int.	14.7	B	24.0	C
10: S. Washington Street / SR 35 @ High Street / SR 35	Signalized	Eastbound	42.2	D	49.9	D
		Westbound	37.4	D	55.4	E
		Northbound	27.5	C	37.8	D
		Southbound	22.5	C	24.4	C
		Whole Int.	28.5	C	34.5	C
11: S. Washington Street @ SR 73 / US 321	Signalized	Eastbound	274.3	F	573.1	F
		Westbound	57.3	E	52.9	D
		Northbound	39.4	D	217.6	F
		Southbound	256.6	F	222.5	F
		Whole Int.	167.2	F	322.7	F

Table 14: 2020 Preferred Alternative Intersection LOS (cont.)

Intersection	Type	Approach	AM Peak Hour	LOS	PM Peak Hour	LOS
			Avg. Delay (sec)		Avg. Delay (sec)	
13: SR 33 @ Sam Houston School Road	Signalized	Westbound	42.2	D	51.5	D
		Northbound	42.0	D	9.8	A
		Southbound	19.0	B	4.3	A
		Whole Int.	35.4	D	11.4	B
14: Sam Houston School Road @ Wildwood Road	STOP Controlled	Eastbound	9.1	A	7.9	A
		Westbound	-	-	-	-
		Southbound	13.5	B	13.4	B
15: Peppermint Road @ Wildwood Road	STOP Controlled	Eastbound	-	-	-	-
		Westbound	7.9	A	8.5	A
		Northbound	15.7	C	18.6	C
16: SR 35 / US 411 / Sevierville Road @ Peppermint Road	STOP Controlled	Eastbound	8.8	A	8.0	A
		Westbound	-	-	-	-
		Southbound	18.0	C	18.3	C
17: SR 35 / US 411 / Sevierville Road @ Hitch Road / Peppermint Hills Drive	STOP Controlled	Eastbound	8.1	A	7.8	A
		Westbound	7.8	A	8.4	A
		Northbound	17.4	C	15.5	C
		Southbound	11.0	B	11.9	B
18: Davis Ford Road @ Hitch Road	STOP Controlled	Eastbound	7.4	A	7.4	A
		Westbound	-	-	-	-
		Southbound	9.9	A	9.4	B
19: Davis Ford Road @ Helton Road	STOP Controlled	Eastbound	-	-	-	-
		Westbound	7.3	A	7.3	A
		Northbound	8.7	A	8.5	A
20: SR 73 / US 321 @ Helton Road / Tuckaleechee Pike	STOP Controlled	Eastbound	10.6	B	8.9	A
		Westbound	9.2	A	10.2	B
		Northbound	14.1	B	14.9	B
		Southbound	57.8	F	26.4	D

Table 15: 2020 Preferred Alternative New SR 33 at I-140 Intersection LOS

Intersection	Type	Approach	AM Peak Hour Avg. Delay (sec)	LOS	PM Peak Hour Avg. Delay (sec)	LOS
SR 33 @ I-140 North of Pellissippi Pkwy	Signalized; Dual Turn Lanes for NB Left, All others Single Lanes	Westbound	19.8	B	27.4	C
		Northbound	17.4	B	3.8	A
		Southbound	10.3	B	3.0	A
		Whole Int.	15.6	B	5.4	A
SR 33 @ I-140 South of Pellissippi Pkwy	Signalized; Separate Turn Lane for All Movements	Eastbound	23.8	C	48.7	D
		Northbound	25.6	C	23.5	C
		Southbound	18.8	B	31.3	C
		Whole Int.	23.9	C	29.8	C

Table 16: 2020 Preferred Alternative New US 411 at I-140 Intersection LOS

Intersection	Type	Approach	AM Peak Hour Avg. Delay (sec)	LOS	PM Peak Hour Avg. Delay (sec)	LOS
US 411 @ I-140 West of Pellissippi Pkwy	Signalized; Separate Turn Lanes for All Movements	Eastbound	7.8	A	9.5	A
		Westbound	5.3	A	5.8	A
		Southbound	32.1	C	25.6	C
		Whole Int.	9.6	A	12.3	B
US 411 @ I-140 East of Pellissippi Pkwy	Signalized; Separate Turn Lanes for All Movements	Eastbound	4.8	A	4.4	A
		Westbound	10.9	B	8.0	A
		Northbound	36.1	D	26.9	C
		Whole Int.	12.8	B	9.1	A

Table 17: 2040 Preferred Alternative Intersection LOS

Intersection	Type	Approach	AM Peak Hour Avg. Delay (sec)	LOS	PM Peak Hour Avg. Delay (sec)	LOS
4: SR 33 @ Wildwood (Horn) Road	STOP Controlled	Westbound	531.4	F	1484.0	F
		Northbound	-	-	-	-
		Southbound	9.6	A	14.0	B
7: SR 33 / E. Broadway Avenue @ SR 35 / S. Washington Street	Signalized	Eastbound	35.2	D	51.6	D
		Westbound	36.0	D	51.0	D
		Northbound	42.7	D	123.7	F
		Southbound	25.8	C	87.3	F
		Whole Int.	34.6	C	85.0	F
9: SR 35 / S. Washington Street @ Sevierville Road	Signalized	Eastbound	33.4	C	44.0	D
		Westbound	33.6	C	46.0	D
		Northbound	14.1	B	21.7	C
		Southbound	12.2	B	23.0	C
		Whole Int.	16.1	B	26.2	C
10: S. Washington Street / SR 35 @ High Street / SR 35	Signalized	Eastbound	36.9	D	35.9	D
		Westbound	32.0	C	43.3	D
		Northbound	32.6	C	204.4	F
		Southbound	24.4	C	35.5	D
		Whole Int.	30.2	C	86.1	F
11: S. Washington Street @ SR 73 / US 321	Signalized	Eastbound	354.2	F	487.8	F
		Westbound	63.6	E	58.8	E
		Northbound	99.4	F	276.1	F
		Southbound	365.3	F	551.8	F
		Whole Int.	243.6	F	408.6	F

Table 17: 2040 Preferred Alternative Intersection LOS (cont.)

Intersection	Type	Approach	AM Peak Hour	LOS	PM Peak Hour	LOS
			Avg. Delay (sec)		Avg. Delay (sec)	
13: SR 33 @ Sam Houston School Road	Signalized	Westbound	48.4	D	51.5	D
		Northbound	76.0	E	9.8	A
		Southbound	23.4	C	4.3	A
		Whole Int.	51.9	D	11.4	B
14: Sam Houston School Road @ Wildwood Road	STOP Controlled	Eastbound	9.0	A	7.9	A
		Westbound	-	-	-	-
		Southbound	13.6	B	13.4	B
15: Peppermint Road @ Wildwood Road	STOP Controlled	Eastbound	-	-	-	-
		Westbound	8.2	A	8.5	A
		Northbound	26.0	D	18.6	C
16: SR 35 / US 411 / Sevierville Road @ Peppermint Road	STOP Controlled	Eastbound	8.3	A	8.0	A
		Westbound	-	-	-	-
		Southbound	13.8	B	18.3	C
17: SR 35 / US 411 / Sevierville Road @ Hitch Road / Peppermint Hills Drive	STOP Controlled	Eastbound	7.9	A	7.8	A
		Westbound	7.7	A	8.4	A
		Northbound	13.7	B	15.5	C
		Southbound	10.3	B	11.9	B
18: Davis Ford Road @ Hitch Road	STOP Controlled	Eastbound	7.4	A	7.4	A
		Westbound	-	-	-	-
		Southbound	9.5	A	9.4	B
19: Davis Ford Road @ Helton Road	STOP Controlled	Eastbound	-	-	-	-
		Westbound	7.3	A	7.3	A
		Northbound	8.6	A	8.5	A
20: SR 73 / US 321 @ Helton Road / Tuckaleechee Pike	STOP Controlled	Eastbound	9.6	A	9.6	A
		Westbound	8.6	A	8.6	A
		Northbound	14.1	B	11.6	B
		Southbound	57.8	F	31.5	D

Table 18: 2040 Preferred Alternative New SR 33 at I-140 Intersection LOS

Intersection	Type	Approach	AM Peak Hour		PM Peak Hour	
			Avg. Delay (sec)	LOS	Avg. Delay (sec)	LOS
SR 33 @ I-140 North of Pellissippi Pkwy	Signalized; Dual Turn Lanes for NB Left, All others Single Lanes	Westbound	169.1	F	49.5	D
		Northbound	182.3	F	53.3	D
		Southbound	9.0	A	6.1	A
		Whole Int.	133.8	F	41.4	D
SR 33 @ I-140 South of Pellissippi Pkwy	Signalized; Separate Turn Lane for All Movements; Dual EB Left Turn Lanes	Eastbound	195.8	F	187.7	F
		Northbound	110.9	F	125.7	F
		Southbound	41.9	D	144.1	F
		Whole Int.	120.4	F	147.4	F

Table 19: 2040 Preferred Alternative New US 411 at I-140 Intersection LOS

Intersection	Type	Approach	AM Peak Hour		PM Peak Hour	
			Avg. Delay (sec)	LOS	Avg. Delay (sec)	LOS
US 411 @ I-140 West of Pellissippi Pkwy	Signalized; Separate Turn Lanes for All Movements	Eastbound	36.6	D	96.5	F
		Westbound	22.2	C	34.2	C
		Southbound	37.4	D	67.0	E
		Whole Int.	31.4	C	70.6	E
US 411 @ I-140 East of Pellissippi Pkwy	Signalized; Separate Turn Lanes for All Movements	Eastbound	24.2	C	12.1	B
		Westbound	25.9	C	5.5	A
		Northbound	53.7	D	57.5	E
		Whole Int.	27.7	C	12.7	B

Table 20 provides a summary of the intersection LOS.

Several of the intersections currently operate at a poor LOS (LOS E or F) with some additional intersections having failing operations by the year 2040 (SR 33 at the I-140 Ramp, SR 33 at Wildwood Road, and S. Washington Street at High Street / SR 35) in the No-Build scenario. The stop controlled intersections evaluated along Sam Houston School Road, Peppermint Road, Hitch Road, and Helton Road generally operate at an acceptable LOS in the No-Build scenario with some poor operations by the year 2020 for some approaches.

Based on this analysis, the construction of the Pellissippi Parkway Extension (Preferred Alternative) would degrade the LOS at one intersection. The LOS for the intersection of SR 33 with Sam Houston School Road goes from a LOS B in the 2020 No-Build to a LOS D in the 2020 Preferred Alternative and from a LOS C in the 2040 No-Build to a LOS D in the 2020 Preferred Alternative during the AM peak hour.

The proposed project would improve the LOS at eight intersections. The locations include:

- SR 33 / E. Broadway Avenue and SR 35 / S. Washington Street intersection. Improvements include LOS D to a LOS C in the AM peak hour and LOS F to LOS D in the 2020 PM peak hour.
- SR 35 / S. Washington Street and Sevierville Road intersection. The LOS improves from LOS D to LOS C in the 2040 PM peak hour.
- S. Washington Street / SR 35 at High Street / SR 35 intersection. The LOS improves from LOS D in the No-Build scenario to LOS C in the Preferred Alternative scenario in the 2040 AM peak hour. In the PM peak hour, The LOS for the year 2020 is LOS C for the Preferred Alternative which is an improvement over the LOS D for the No-Build scenario. However, for the year 2040 in the PM peak hour, the LOS declines to a LOS F in the Preferred Alternative compared to a LOS E for the No-Build scenario.
- Sam Houston School Road at Wildwood Road. The Preferred Alternative improves the LOS to B in both the AM and PM peak hours for both analysis years (2020 and 2040).
- Peppermint Road at Wildwood Road. The Preferred Alternative improves the LOS to LOS C for both the AM and PM peak hours in the year 2020. In the year 2040, the LOS is improved to LOS D for the AM peak hour and remains at a LOS C in the PM peak hour.
- SR 35 / US 411 / Sevierville Road at Peppermint Road. The Preferred Alternative improves the LOS to LOS C for both the AM and PM peak hours for the analysis year 2020. In the year 2040 the LOS improves to LOS B for the AM peak hour and remains at LOS C for the PM peak hour.
- SR 35 / US 411 / Sevierville Road at Hitch Road / Peppermint Hills. The Preferred Alternative improves the LOS to LOS C for both the AM and PM peak hours for the analysis year 2020. In the year 2040 the LOS improves to LOS B for the AM peak hour and remains at LOS C for the PM peak hour.
- SR 73 / US 321 at Helton Road / Tuckaleechee Pike. In the year 2040 in the PM peak hour, the Preferred Alternative improves the LOS to D.

The new interchanges created by this project at SR 33 and US 411 are shown to operate at an acceptable level in the year 2020. By the year 2040, some of the movements / operations begin to degrade given the volumes forecasted for these intersections. Further consideration would need to be given to the specific design for these interchanges in future project stages.

Table 20: Intersection LOS Summary

Intersection	AM Peak Hour					PM Peak Hour				
	2013 Existing	2020 No-Build	2040 No Build	2020 Preferred Alternative	2040 Preferred Alternative	2013 Existing	2020 No-Build	2040 No Build	2020 Preferred Alternative	2040 Preferred Alternative
SR 33 @ I-140 Off-Ramp	C	E	F	-	-	F	F	F	-	-
SR 33 @ I-140 On-Ramp	F	F	F	-	-	C	E	F	-	-
SR 33 @ Wildwood Rd	D	F	F	F	F	F	F	F	F	F
SR 33 / E. Broadway Ave @ SR 35 / S. Washington St	C	D	D	C	C	E	F	F	D	F
SR 35 / S. Washington St @ Sevierville Rd	B	B	B	B	B	C	C	D	C	C
S. Washington St / SR 35 @ High St / SR 35	C	C	D	C	C	C	D	E	C	F
S. Washington St @ SR 73 / US 321	F	F	F	F	F	F	F	F	F	F
SR 33 @ Sam Houston School Road	B	B	C	D	D	B	B	B	B	B
Sam Houston School Road @ Wildwood Road	B	C	F	B	B	B	C	F	B	B
Peppermint Road @ Wildwood Road	B	F	F	C	D	B	F	F	C	C
SR 35 / US 411 / Sevierville Road @ Peppermint Road	C	F	F	C	B	C	F	F	C	C
SR 35 / US 411 / Sevierville Road @ Hitch Road / Peppermint Hills	C	D	F	C	B	C	D	F	C	C
Davis Ford Road @ Hitch Road	B	B	B	A	A	A	B	B	B	B
Davis Ford Road @ Helton Road	A	A	A	A	A	A	A	A	A	A
SR 73 / US 321 @ Helton Road / Tuckaleechee Pike	F	F	F	F	F	D	F	F	D	D

3.4 Intersection Delay Results

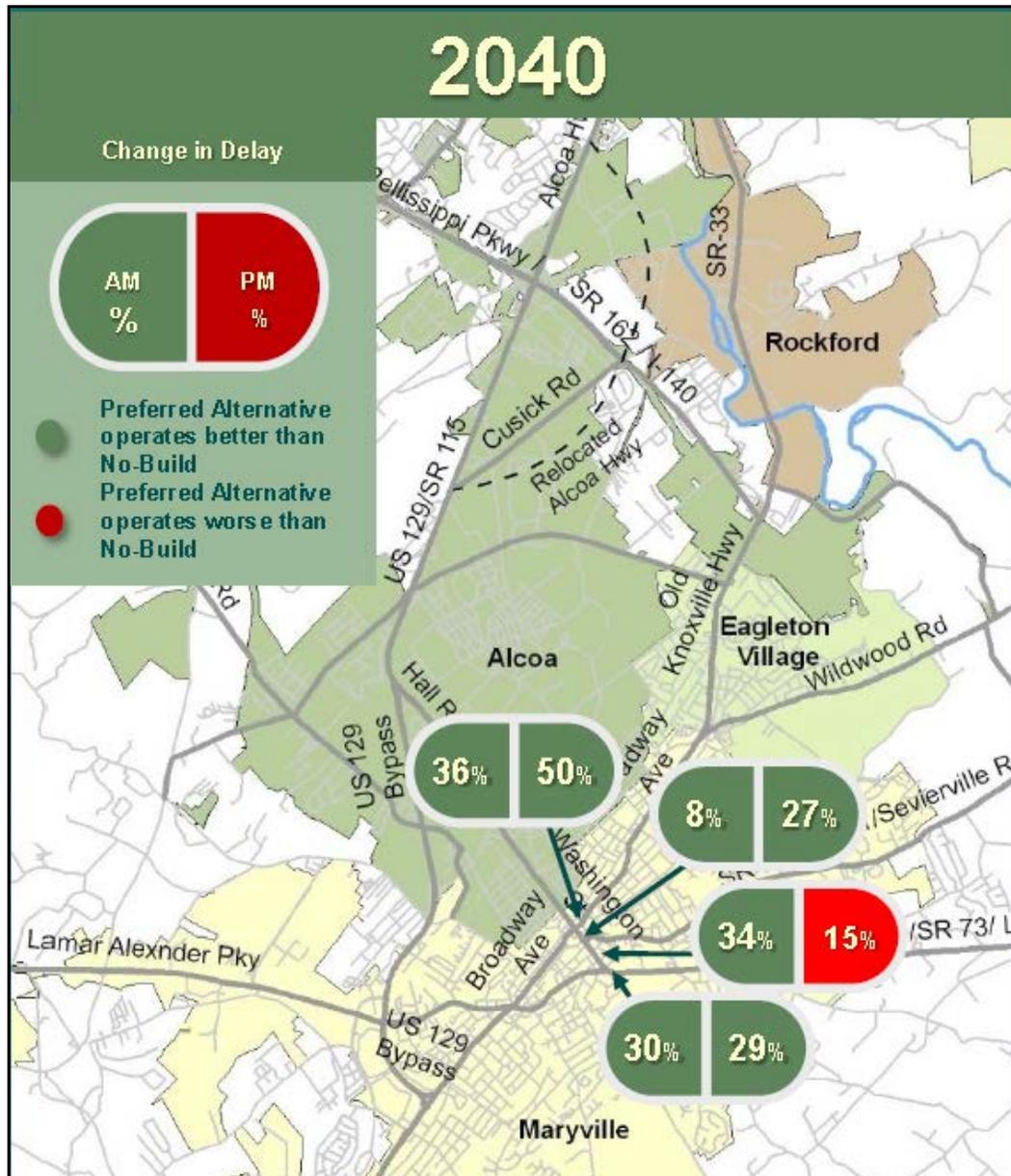
The delay associated with the LOS is another measure to determine changes in traffic operations. Delay is a measure of the additional travel time experienced by a driver through an intersection. The average delay per movement is shown on the previous tables (**Tables 11-19**), which detail intersection LOS. To provide a summary of the impacts associated with the Preferred Alternative, the delay was compared to the No-Build Alternative. **Table 21** summarizes the expected change in the amount of delay (in terms of seconds of delay) at key intersections in the design year 2040 in comparison with the No-Build Alternative. **Figure 9** displays the percentage difference in delay between the No-Build and the Preferred Alternative at those intersections in 2040.

Table 21: 2040 Intersection Delay Change for Preferred Alternative Compared to No-Build

Intersection	2040	
	AM Change in Delay (seconds)	PM Change in Delay (seconds)
SR 33/E Broadway Ave @ SR 35/S Washington St	19.2	85.1
SR 35/S Washington St @ Sevierville Rd	1.4	9.4
S Washington St/SR 35 @ High St/SR 35	15.8	-11.3
S Washington St @ SR 73/US 321	106.4	162.7

	Preferred Alternative operates better than No-Build
	Preferred Alternative operates worse than No-Build

Figure 9: Intersection Delay Comparison between 2040 No-Build and Preferred Alternative



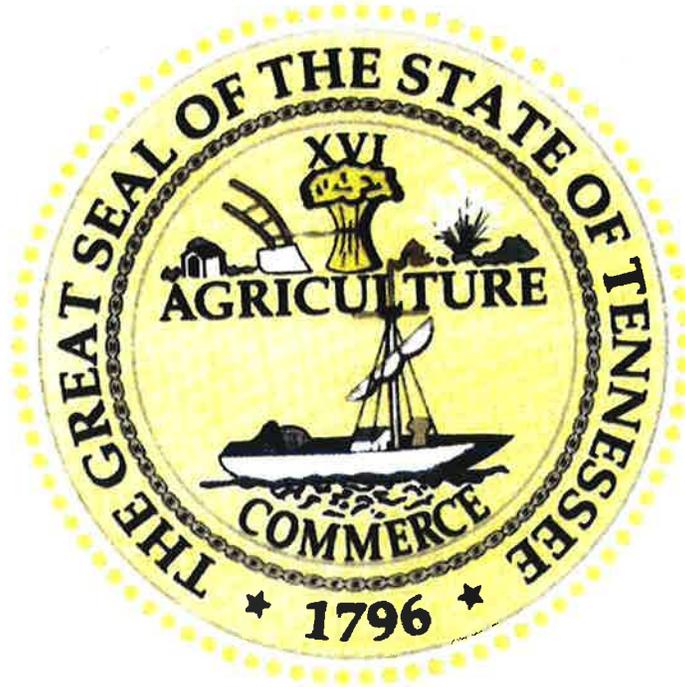
As shown in **Table 21** and **Figure 9**, the Preferred Alternative shows substantial improvement in delay in most of the intersections in the Alcoa / Maryville core. The improvements range from 8% reduction in delay to 50% reduction in delay (compared to the No-Build). In actual terms of seconds of delay, these improvements correspond to a reduction in delay of between 1 second and 85 seconds over the No-Build.

4.0 SUMMARY OF CHANGES

Following the most recent update to the Knoxville Regional Travel Demand Model (adopted in June 2013 for horizon year 2034), it was requested that the traffic operations analysis for the Pellissippi Parkway Extension EIS be updated. A new *Traffic Forecast Study* was prepared by Sain Associates, Inc. (December 31, 2013) and was used in this analysis. Some key points related to this update include the following:

- A substantial update to the Highway Capacity Manual and Software was completed since the last Traffic Operations Technical Report Addendum. The previous analysis was completed using the HCS Plus Software; this update utilized the HCS 2010 software. This should be taken into consideration when comparing results from the previous analysis.
- The proposed Pellissippi Parkway Extension (from SR 33 to US 411) will operate at an acceptable LOS through the analysis year 2040.
- Several key intersections in the Maryville / Alcoa core area show reductions in delay (measured in seconds) as a result of the Preferred Alternative.
- Intersections in the eastern portion of the study area with the local roads (i.e. Sam Houston School Road at Wildwood Road, Peppermint Road at Wildwood Road, SR 35 at Peppermint Road, SR 35 at Hitch Road) improve to an acceptable LOS with the Preferred Alternative.

TENNESSEE
DEPARTMENT OF TRANSPORTATION



TRAFFIC FORECAST STUDY

PELLISSIPPI PARKWAY EXTENSION

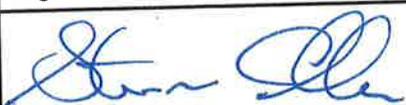
From: SR-33 to SR-73/US-321,

Blount County

PREPARED BY SAIN ASSOCIATES, INC.

for the

Strategic Transportation Investments Division

Recommended by:	Signature	DATE
TRANSPORTATION DIRECTOR STRATEGIC TRANSPORTATION INVESTMENTS DIVISION		12-23-13

This document is covered by 23 USC § 409 and its production pursuant to fulfilling public planning requirements does not waive the provisions of § 409.

INTRODUCTION

This report documents traffic volume forecasts for a proposed extension of Pellissippi Parkway / I-140 from State Route 33 to US Highway 321 in Blount County, Tennessee. These forecasts represent an update to previous forecasts produced in 2007 and updated in 2011. The purpose of the current update is to incorporate changes from the new Knoxville Regional Travel Demand Model (adopted in June 2013 for horizon year 2034). The traffic forecasts provide estimates of future traffic volumes for horizon years 2020 and 2040 without and with the proposed Pellissippi Parkway Extension. The traffic volume estimates for conditions with the proposed Pellissippi Parkway Extension are based upon the preferred alignment as documented in TDOT's Environmental Impact Statement (EIS).

The area included in this updated study was modified from previous versions to eliminate intersections that have been shown to not be influenced by the Pellissippi Parkway Extension. The modified study area is shown on Figure 1.

The process used to develop the updated traffic forecasts in this study was approved by the TDOT's Strategic Transportation Investments Division. In general, the process included four major steps: field data collection, data tabulation, validation or adjustment of segment volumes from the regional travel demand model, and estimation of future traffic volumes for horizon years 2020 and 2040 at specific intersections and segments impacted by the proposed Pellissippi Parkway extension.

Figure 1 – Study Area

DATA COLLECTION

Sain Associates retained the assistance of Quality Counts, a firm that specializes in traffic data collection, to gather traffic volume counts at intersections and interchanges in the study area. The field data collection efforts were conducted on Tuesday, October 29, 2013 and Tuesday, November 5, 2013 between the hours of 6:00-9:00 a.m., 11:00 a.m.-1:00 p.m., and 3:00-6:00 p.m. Area schools were in session during the days that surveys were taken. Following is a summary of items collected in the field:

Location	Date Counted	Type of Count	Comment
I-140 @ US 129 interchange	10/29/13	Mechanical tube counts on all ramps and on US 129	None
US 120 @ SR 35 interchange	10/29/13	Mechanical tube counts on all ramps	None
SR 33 @ I-140 ramps	10/29/13	Manual turning movement count	Construction was underway on SR 33 but did not hinder flow of traffic during survey hours
SR 33 @ Horn Street / Wildwood Road	10/29/13	Manual turning movement count	None
SR 35 @ SR 33	10/29/13	Manual turning movement count	None
SR 35 / S Washington @ Sevierville Road	11/5/13	Manual turning movement count	Traffic flow was hindered by a construction detour. This count was discarded and a count provided by the City of Maryville from 5/18/11 was substituted for the forecasts.
SR 35 / S Washington @ High Street/SR 35 / US 411	10/29/13	Manual turning movement count	Traffic flow was hindered by a construction detour. This count was discarded and a count provided by the City of Maryville from 5/18/11 was substituted for the forecasts.
S Washington @ US 321	10/29/13	Manual turning movement count	None

The intersection traffic counts collected in the field were supplemented with data from TDOT's segment volume database.

REGIONAL TRAVEL DEMAND MODEL

This update to previously prepared traffic forecasts for Pellissippi Parkway Extension was necessitated by changes in the Knoxville Regional Travel Demand Model that were implemented by the Knoxville Transportation Planning Organization's (TPO). The updated travel demand model for horizon year 2034 was adopted in June 2013. The updated model includes new socio economic forecasts for Blount County that have a direct influence on traffic projections in the area roadway network. The new travel demand model was used as a primary source for developing the traffic forecast volumes for Pellissippi Parkway Extension.

During the initial stages of developing new traffic forecasts for Pellissippi Parkway Extension, The Knoxville TPO voted to remove a project to improve James White Parkway from the long range transportation plan. With the assistance of the Knoxville TPO staff, the travel demand model was tested to see if removal of James White Parkway would have an impact on traffic volumes in the Pellissippi Parkway Extension study area. The test runs showed that removal of James White Parkway does not alter traffic forecasts in the Pellissippi Parkway Extension study area.

TRAFFIC FORECASTS

The traffic forecasting process utilized existing traffic count data and future volumes projected by the Knoxville regional travel demand model. It was first necessary to determine whether the travel demand model was sufficiently calibrated so that its projections could be relied upon for the Pellissippi Parkway Extension. The verification and forecasting process involved four major steps:

1. Examine segment volumes from the model's year 2010 assignment and compare them to actual ground counts.
2. Identify segments where adjustments are needed to increase or decrease the model volumes to better match actual ground counts.
3. Develop growth rates from the model's segment volumes for 2034 and apply them to existing segment volumes to derive future segment volumes for 2020 and 2040.
4. Apply growth rates to existing intersection turning movement volumes to forecast them to future years 2020 and 2040, matching as closely as possible to the adjacent segment volumes derived from step 3.

Segment Volume Calibration

Step one of the verification process involved comparing actual traffic counts to volumes in the base year model assignments. Traffic counts from TDOT's Advanced Traffic Data Analysis and Management (ADAM) system was used for the verification process. In general, the comparison revealed that the model volumes were well calibrated to actual count data. The only area of concern identified is in the eastern edge of the study area where the model over assigned traffic volumes on Peppermint Road, Hitch Road, and Helton Road.

Where adjustments to the model were needed to account for volume differences, historic count data from appropriate ADAM stations was used to develop a growth rate that could be used to forecast 2020 and 2040 volumes without the Pellissippi Parkway Extension. Finally, differences between the “No Pellissippi Parkway Extension” and “With Pellissippi Parkway Extension” model assignments were then applied to the adjusted 2020 and 2040 volumes to estimate volumes with the Pellissippi Parkway Extension.

In most instances, the model volumes were deemed appropriate based upon the calibration analysis, and they were used as reported with only an adjustment to shift the 2034 model output to the horizon years 2020 and 2040.

Traffic Volume Forecasts

Future traffic volume forecasting for the project involved consideration of other roadway network improvements and land developments planned for the Alcoa/Maryville area. The Relocated Alcoa Highway (RAH) project is included in the Knoxville Transportation Improvement Plan (TIP). It is planned to be constructed east of US 129/SR 155 with the southern termini connecting with US 129/SR 115 north of SR 335 and the northern termini connecting with US 129/SR 115 north of Pellissippi Parkway. The RAH project is included in the Knoxville travel demand model, so it was also included in the traffic forecasts for 2020 and 2040.

In previous traffic forecasts, a Southern Loop (SL) project was included to connect with US 321/SR 73 east of Maryville and extend in a general southwest direction to US 129/US 411/SR 33. The Southern Loop is not in the current Knoxville TIP and is therefore not coded into the Knoxville travel demand model. It is not included in this current traffic forecast update.

Construction of a large research and development park is being planned for a parcel of land east of SR 33 in the vicinity of the proposed Pellissippi Parkway Extension. Current plans for the development propose that the park’s access would be provided via SR 33, south of its interchange with Pellissippi Parkway. Increases in population and employment that will result from the R&D Park are incorporated into the Knoxville travel demand model for the traffic analysis zone that contains the development parcel. By incorporating the additional population and employment, traffic impacts of the R&D Park were included in the model’s traffic forecasts.

The traffic forecasts prepared for the Pellissippi Parkway Extension study are included in the appendix to this report. Traffic volumes for existing conditions are included along with forecasts for future years 2020 and 2040. Following is a list of each item included in the appendix.

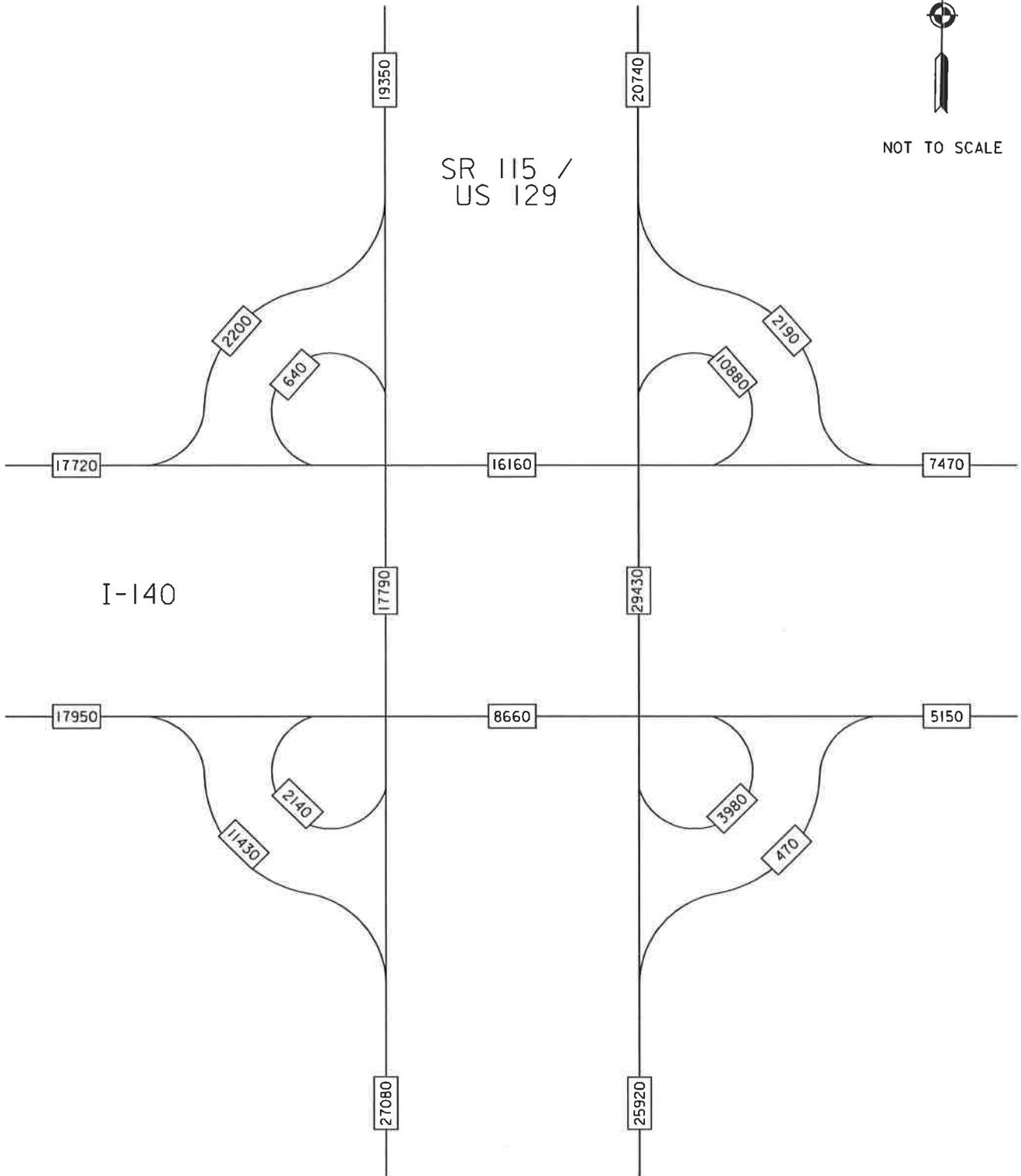
- Existing turning movement volumes for the following intersections:
 - SR 115 / US 129 @ I-140 / Pellissippi Parkway
 - SR 115 / US 129 @ SR 35
 - SR 33 @ I-140 / Pellissippi Parkway
 - SR 33 @ Horn Street/Wildwood Road
 - SR 33 / E. Broadway Avenue @ SR 35 / S. Washington Street
 - SR 35 / S. Washington Street @ Sevierville Road

- S. Washington Street / SR 35 @ High Street / SR 35
 - S. Washington Street @ SR 73 / US 321
 - SR 33 @ Sam Houston School Road
 - Wildwood Road @ Peppermint Road
 - Wildwood Road @ Sam Houston School Road
 - SR 35 / US 411 / Sevierville Road @ Peppermint Road
 - SR 35 / US 411 / Sevierville Road @ Hitch Road
 - Davis Ford Road @ Helton Road
 - David Ford Road @ Hitch Road
 - SR 73 / US 321 @ Helton Road / Tuckaleechee Pike
- Schematic Diagram of Average Annual Daily Traffic (AADT) Volumes and Truck Percentages for existing conditions (2010, 2012, or 2013) and future years 2020 and 2040 for the scenario without Pellissippi Parkway Extension (“No Build”)
 - Intersection Volumes (2020 and 2040) for the “No Build” scenario at the same intersections listed for existing conditions
 - Schematic Diagram of Average Annual Daily Traffic (AADT) Volumes and Truck Percentages for the years 2020 and 2040 for the scenario with Pellissippi Parkway Extension (“Build”)
 - Intersection Volumes (2020 and 2040) for the “Build” scenario at the same intersections listed for existing conditions plus these intersections:
 - Pellissippi Parkway Extension @ SR 35 / US 411 / Sevierville Road
 - Pellissippi Parkway Extension @ SR 73 / US 321.



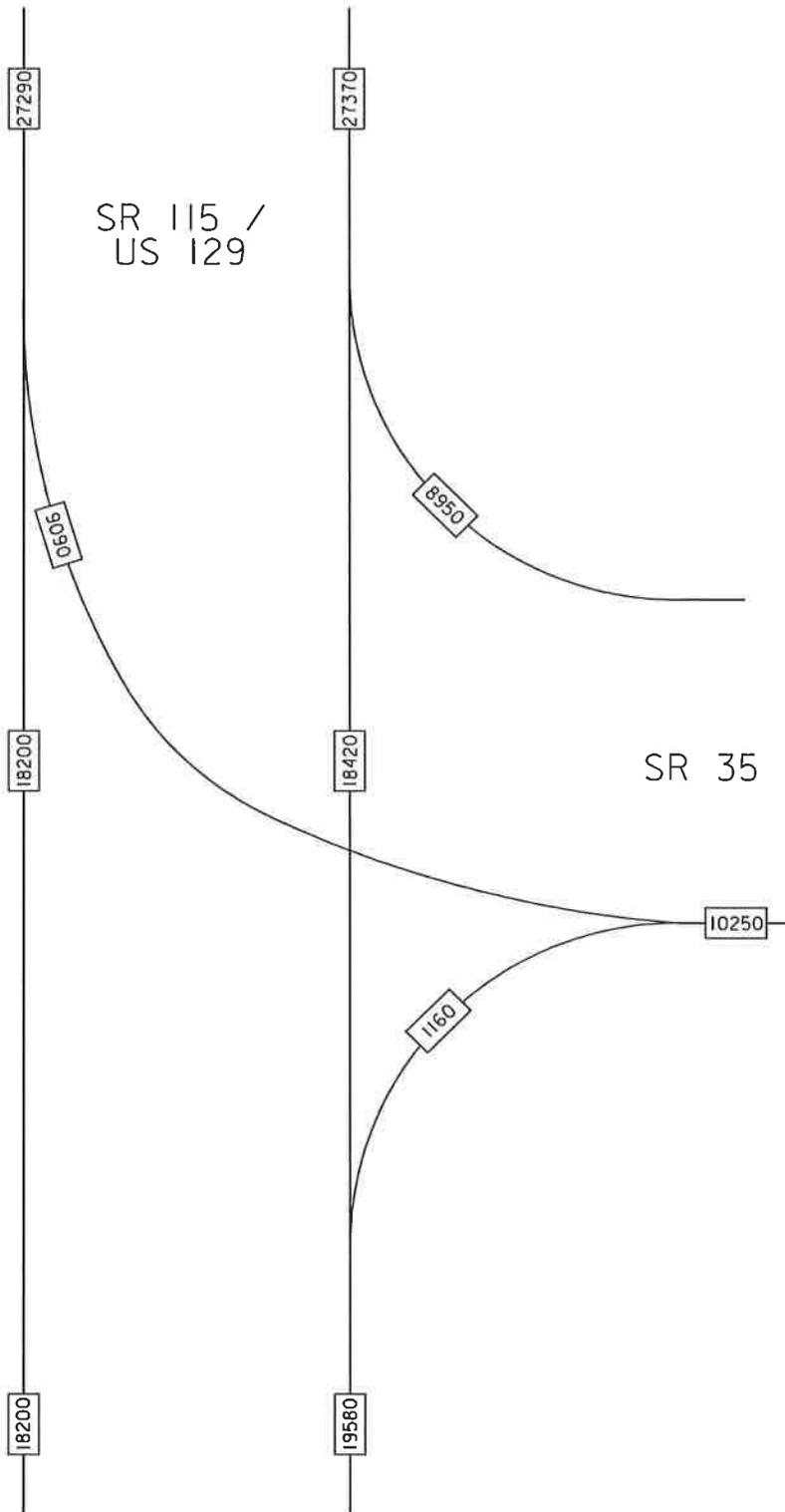
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SR 115 /
US 129



2013 AADT

SR 115/US 129 @
I-140 / Pellissippi Parkway



NOT TO SCALE

2013 AADT

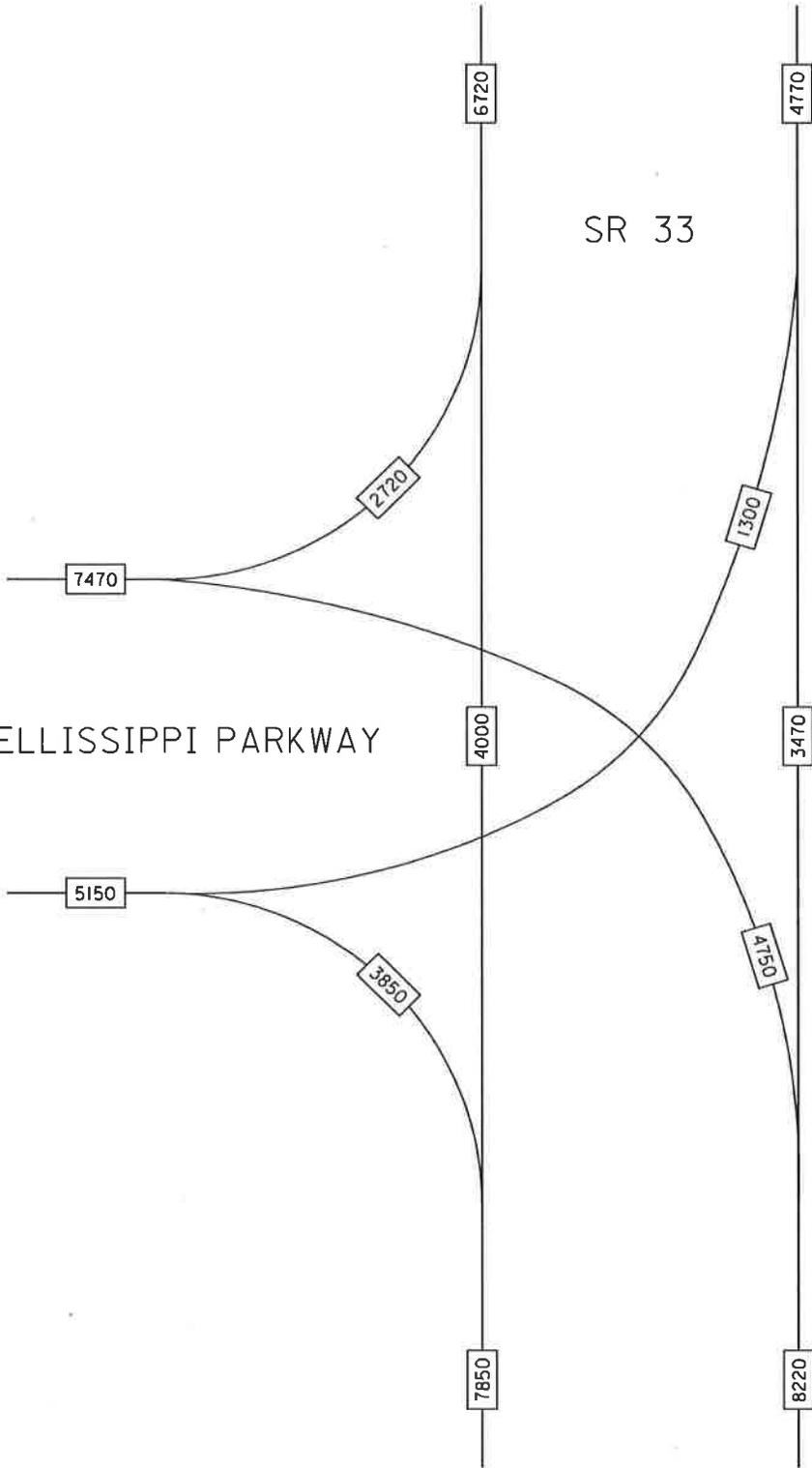
SR 115/US 129 @ SR 35



NOT TO SCALE

SR 33

PELLISSIPPI PARKWAY

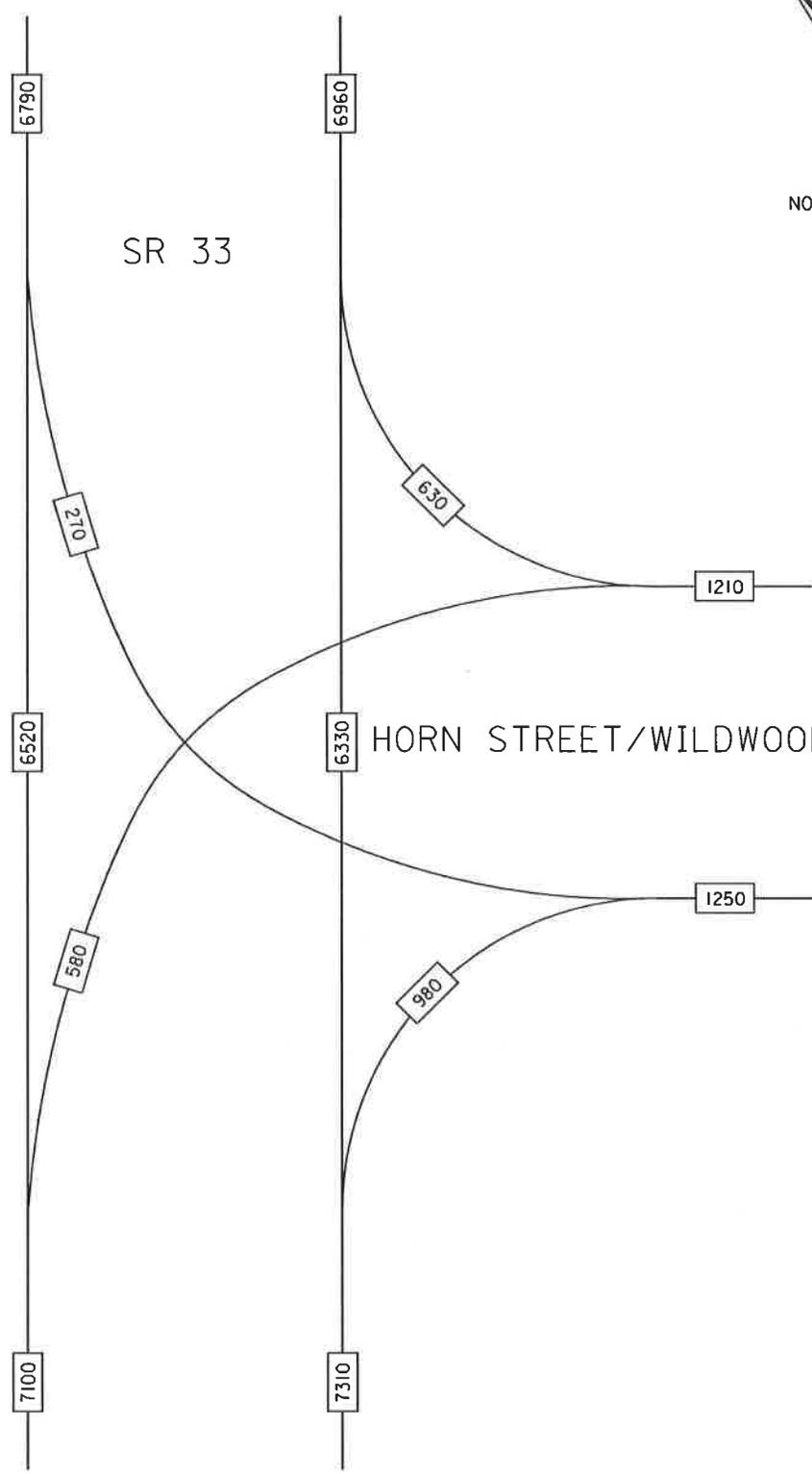


2013 AADT

SR 33 @ PELLISSIPPI PARKWAY



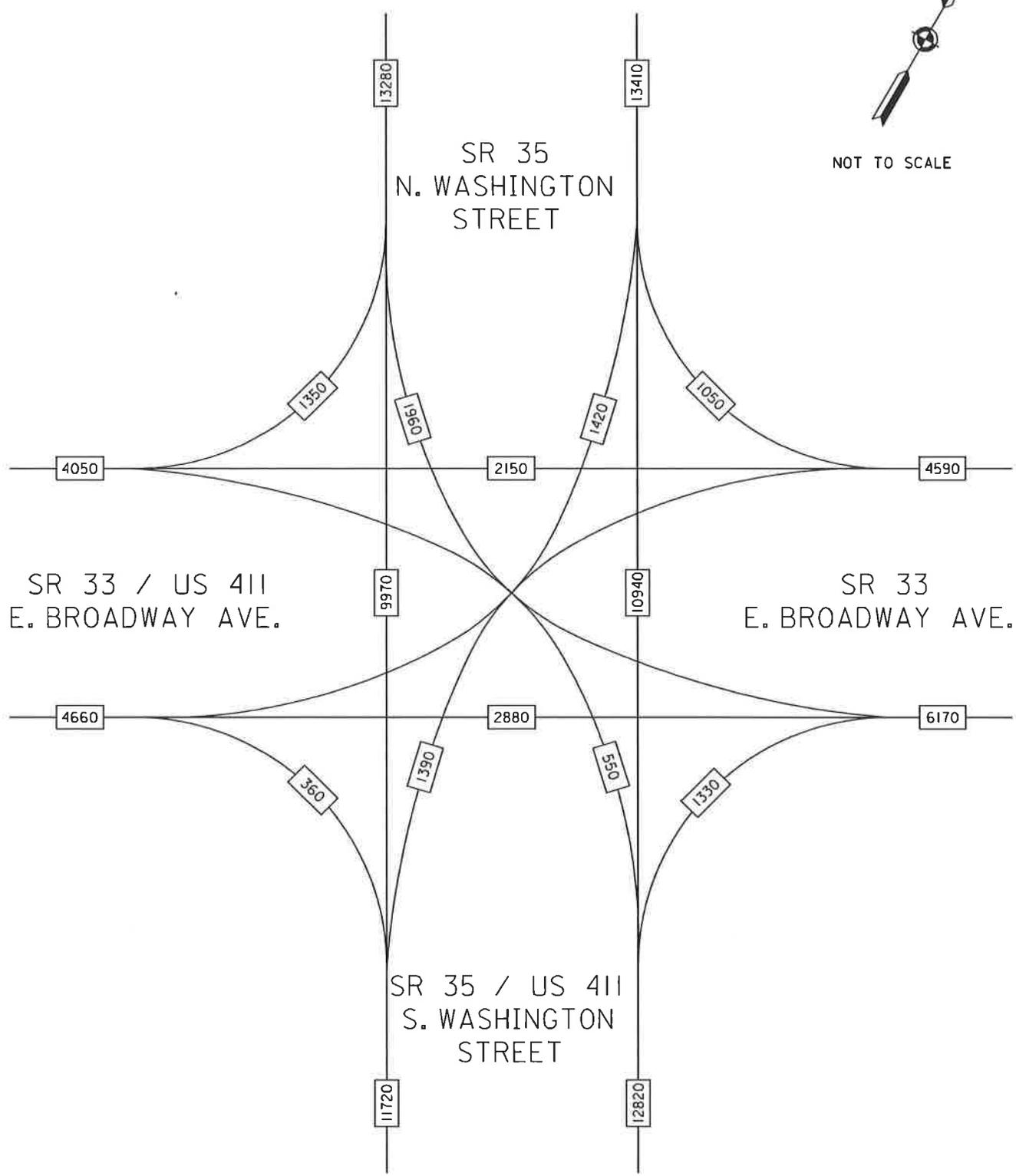
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2013 AADT	SR 33 @ HORN STREET/ WILDWOOD ROAD
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NOT TO SCALE



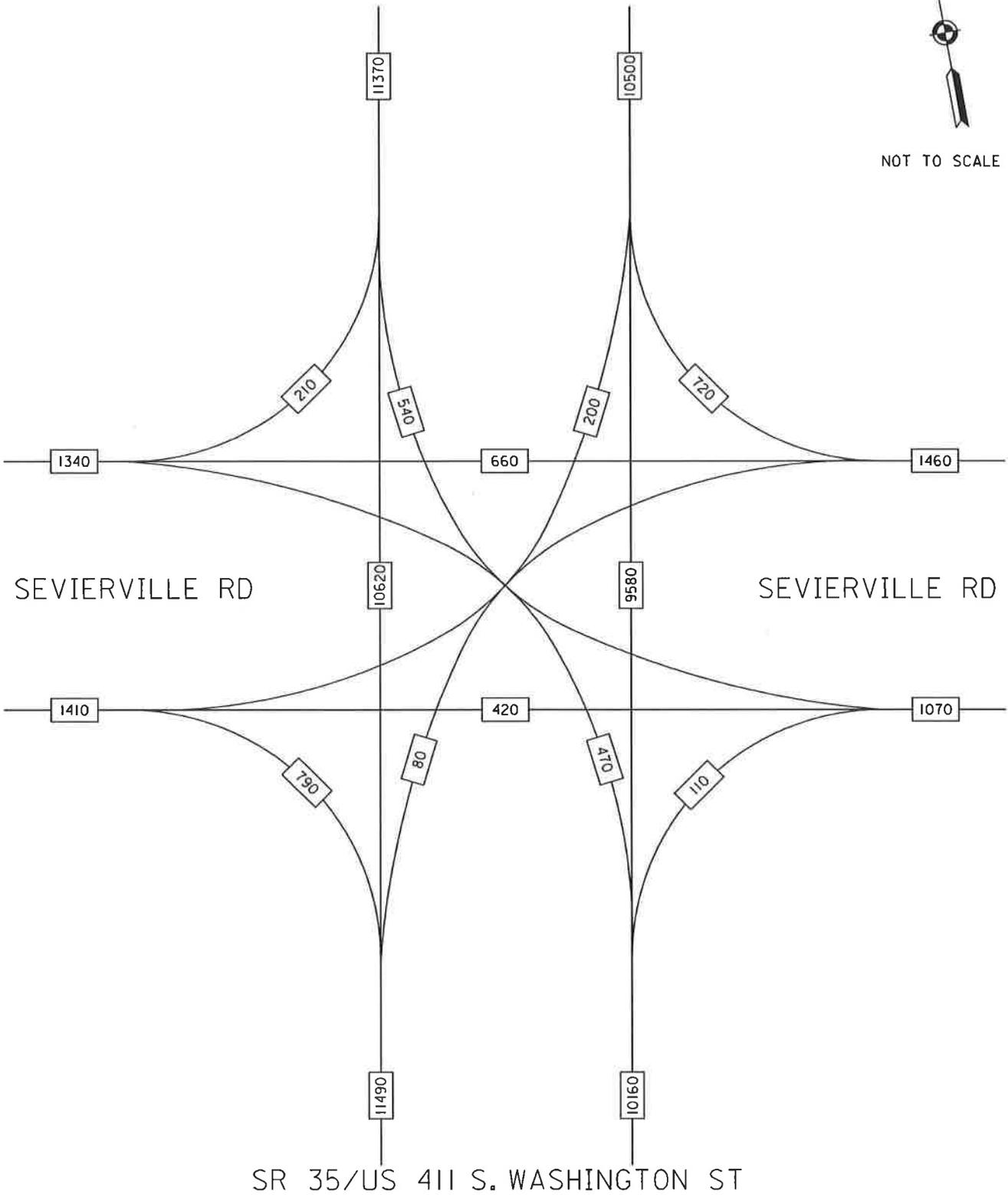
2013 AADT

SR 33 @ SR 35

SR 35/N. WASHINGTON ST



NOT TO SCALE

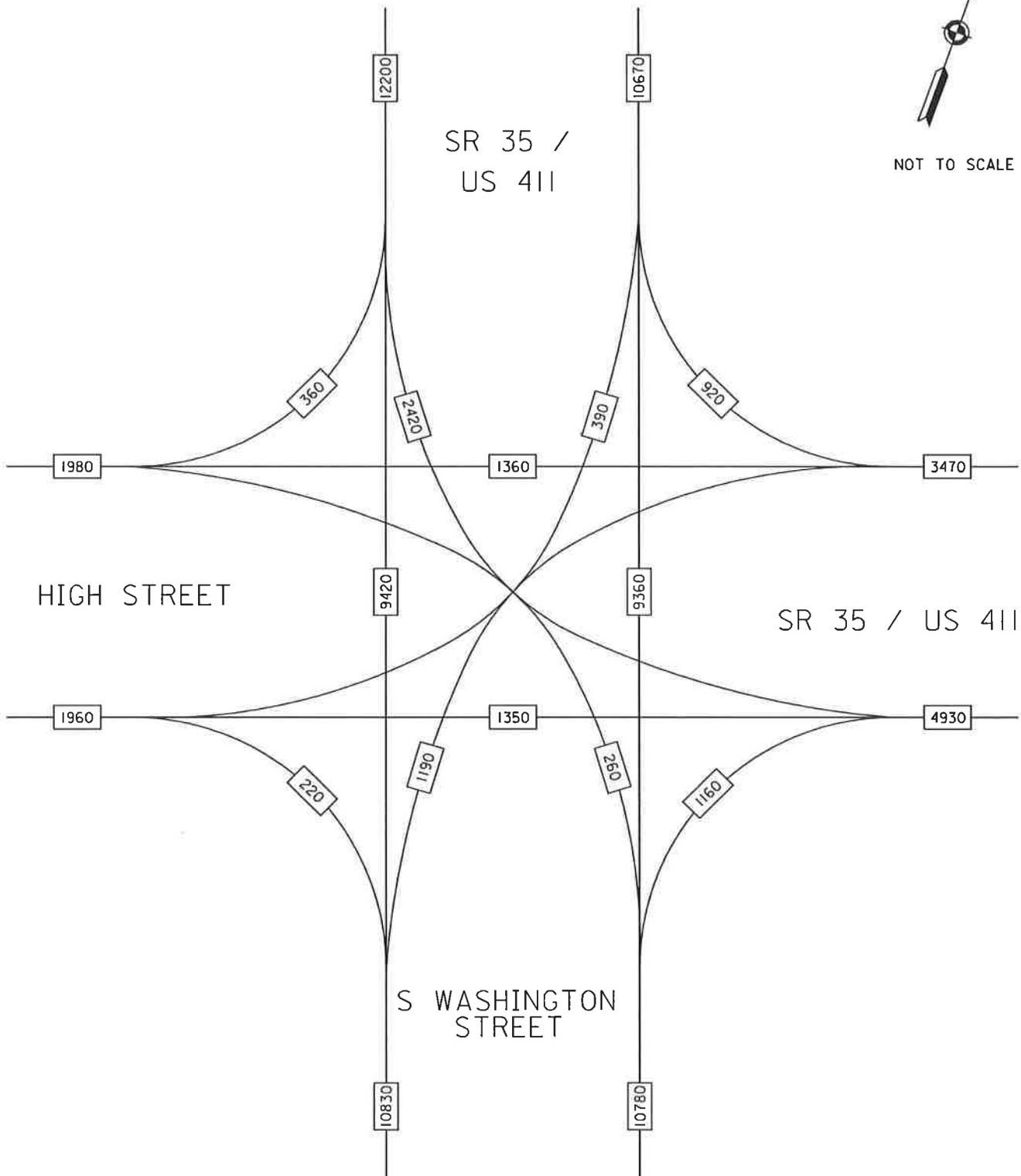


2011 AADT

SEVIERVILLE RD @
SR 35/US 411 WASHINGTON ST



NOT TO SCALE

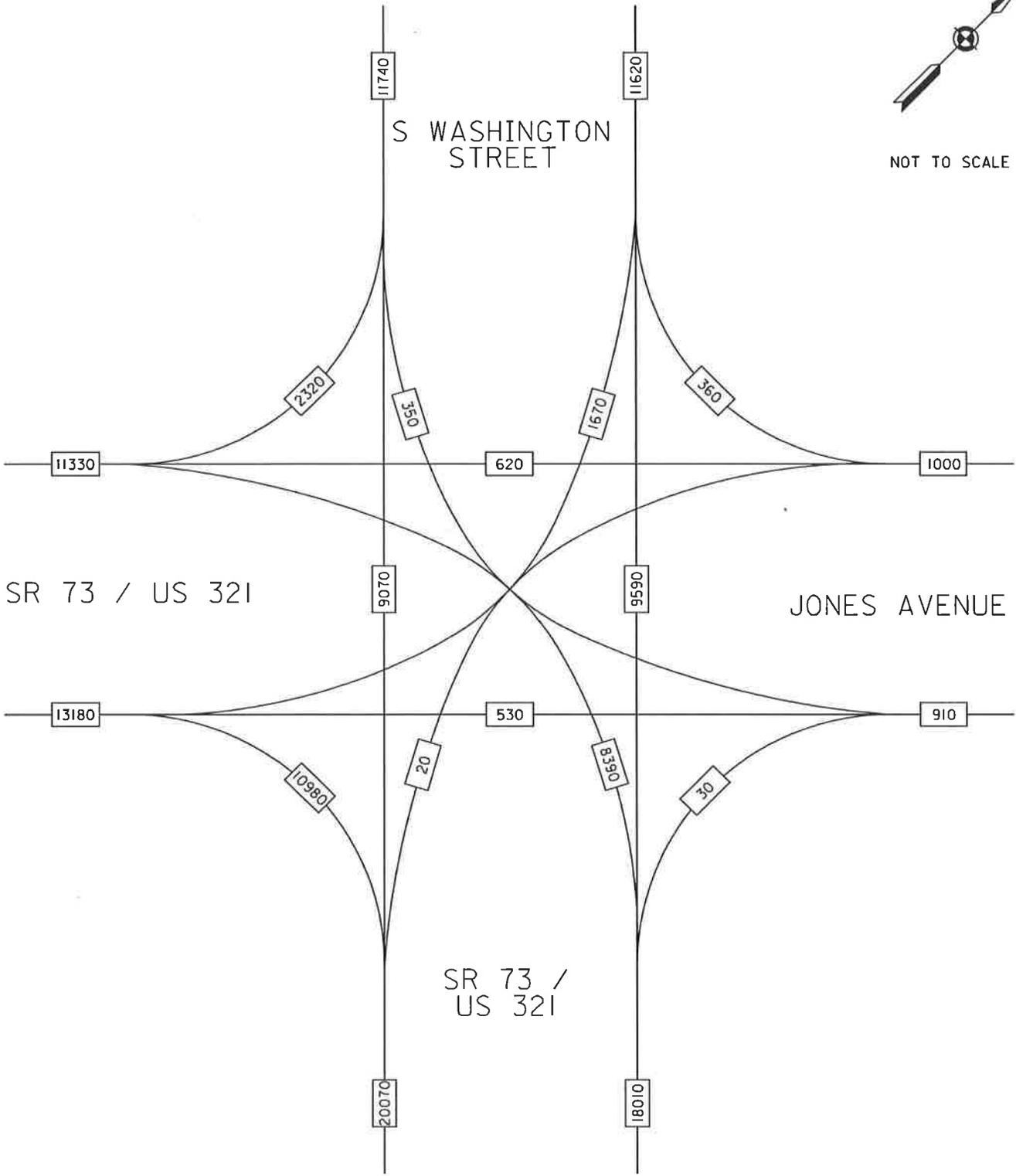


2011 AADT

S WASHINGTON ST / SR 35
@ HIGH ST / SR 35



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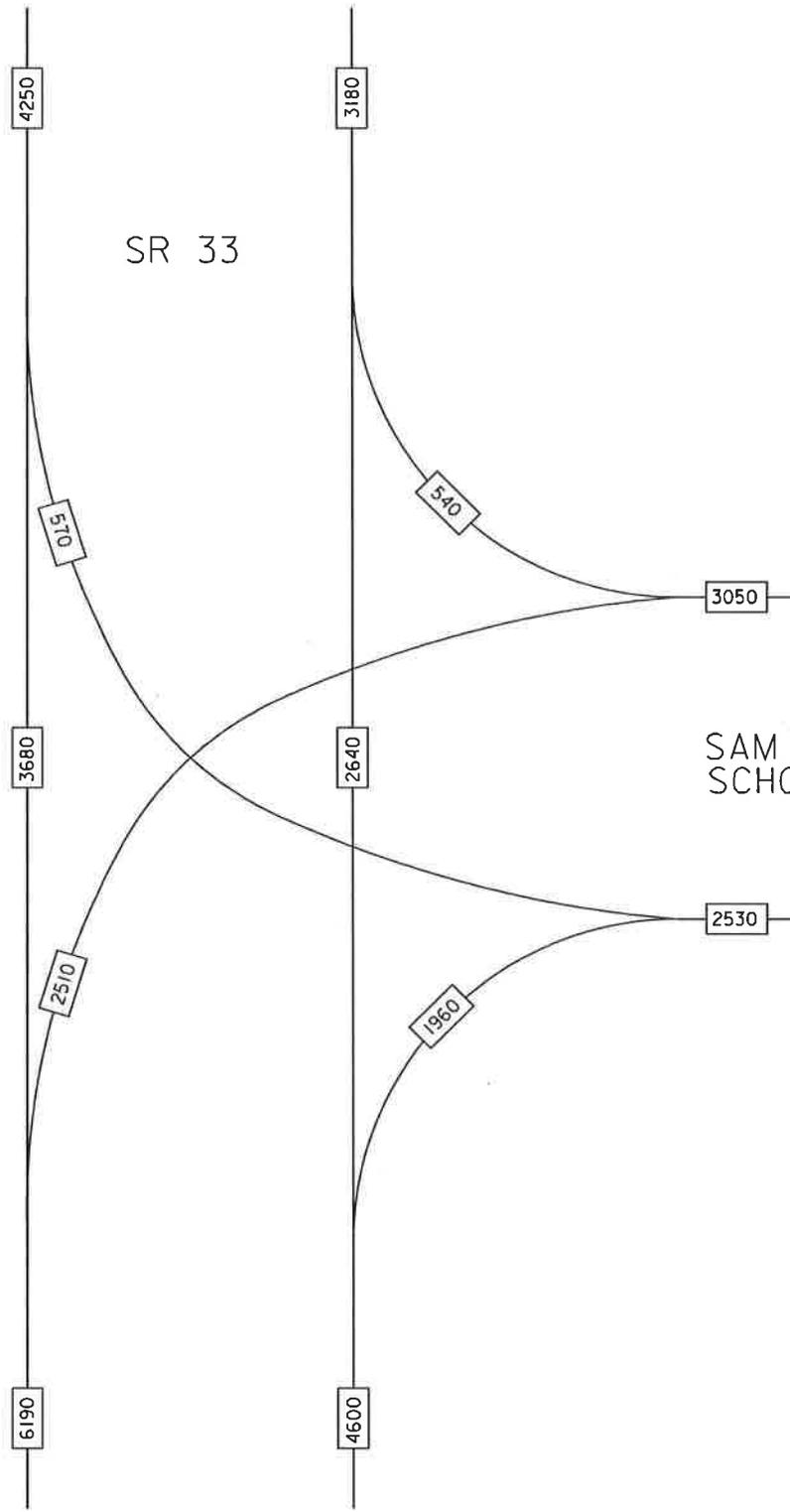


2013 AADT

S Washington St
@ SR 73 / US 321



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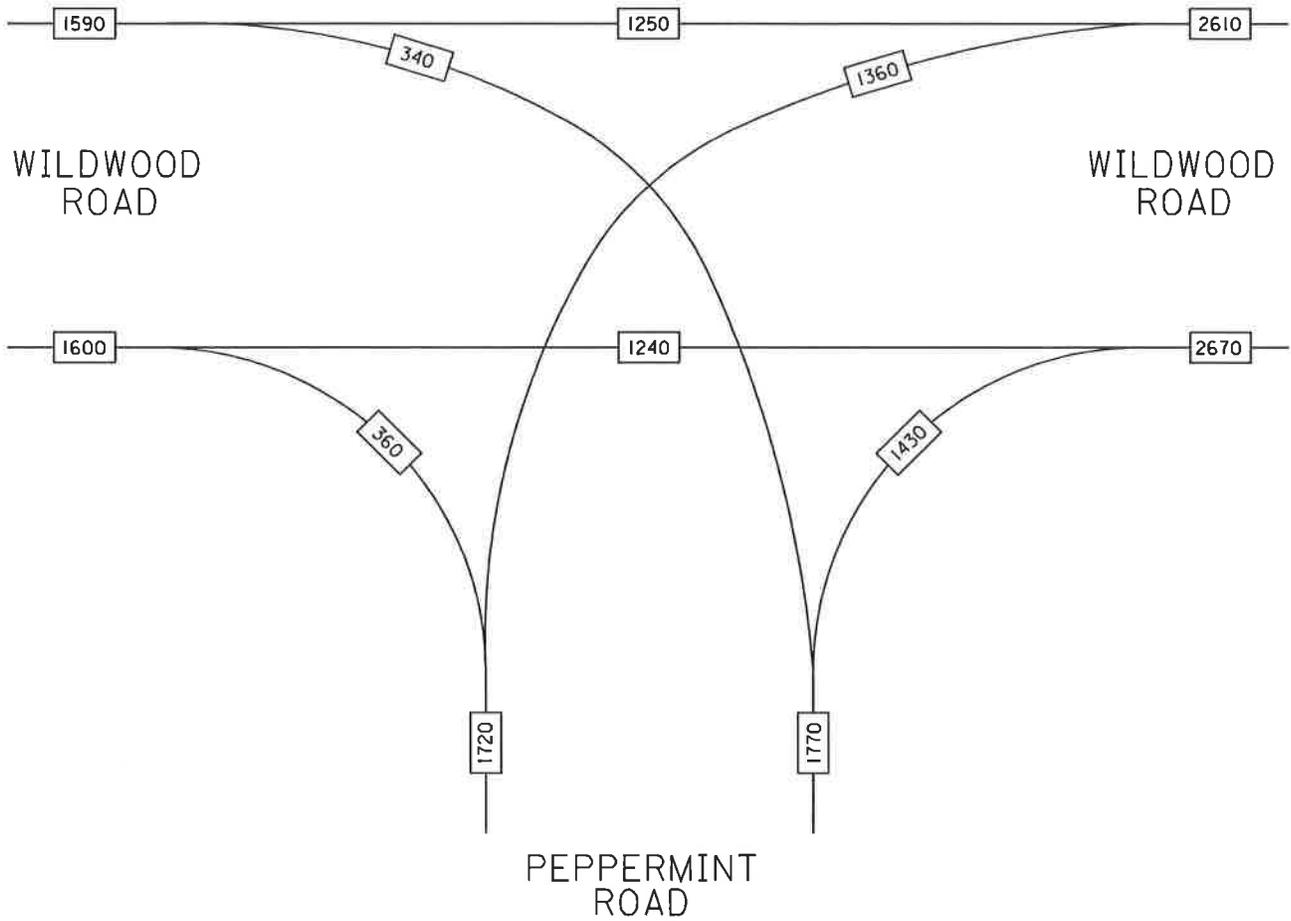


2010 AADT

SR 33 @
SAM HOUSTON SCHOOL ROAD

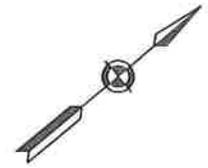


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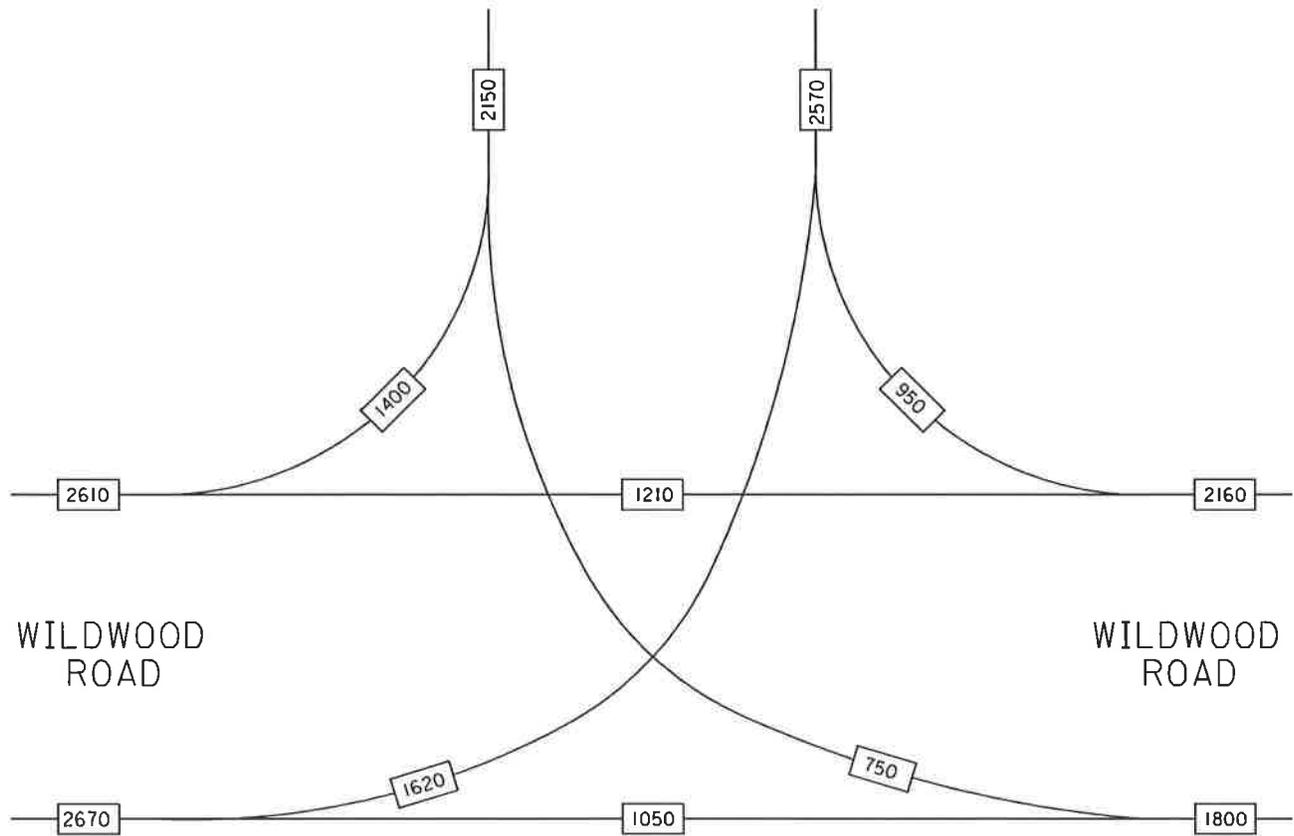
2010 AADT

PEPPERMINT ROAD @
WILDWOOD ROAD



NOT TO SCALE

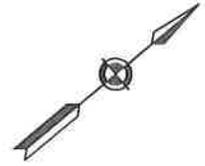
SAM HOUSTON SCHOOL ROAD



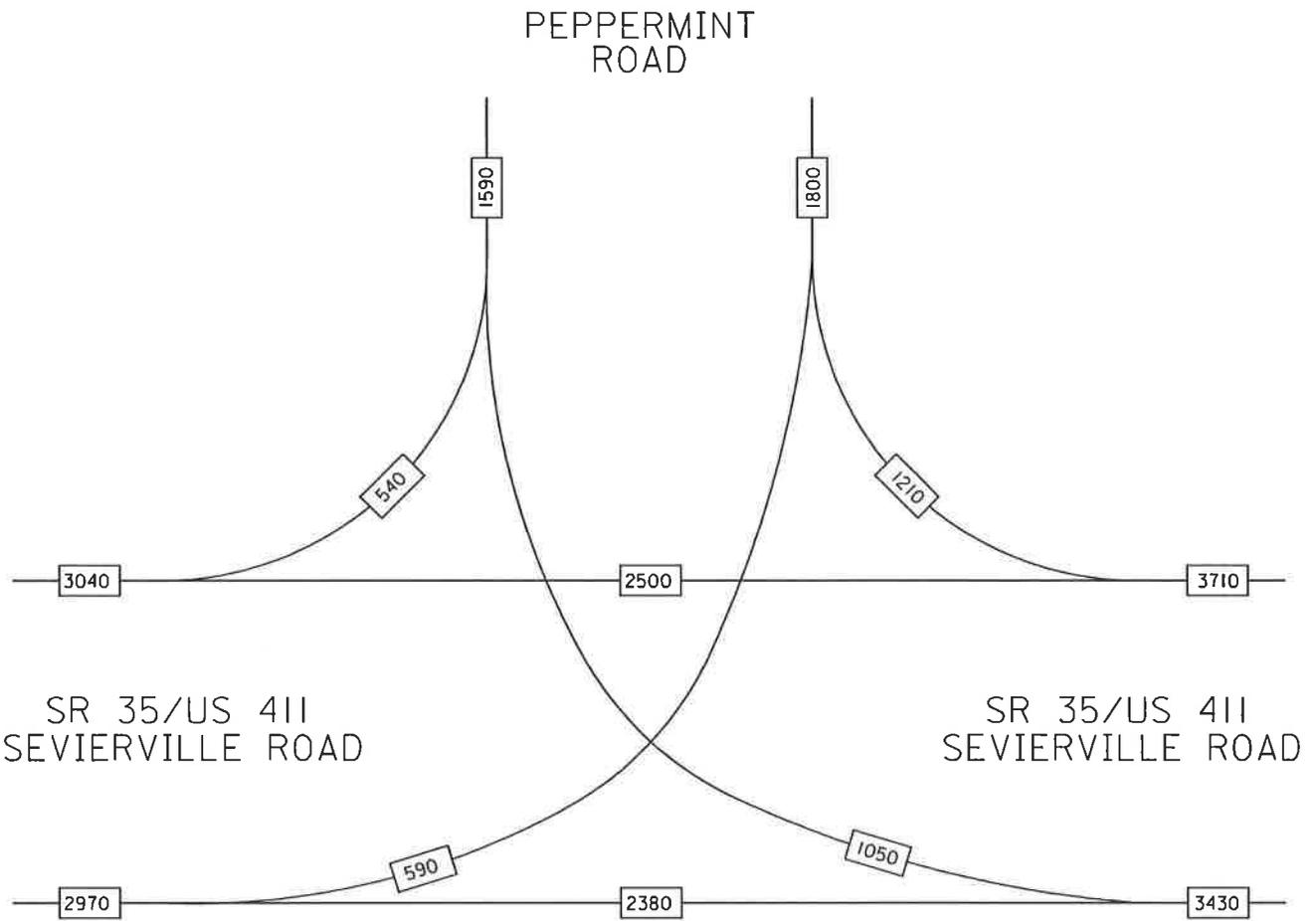
WILDWOOD
ROAD

WILDWOOD
ROAD

2010 AADT	SAM HOUSTON SCHOOL ROAD @ WILDWOOD ROAD
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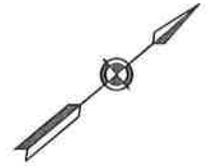
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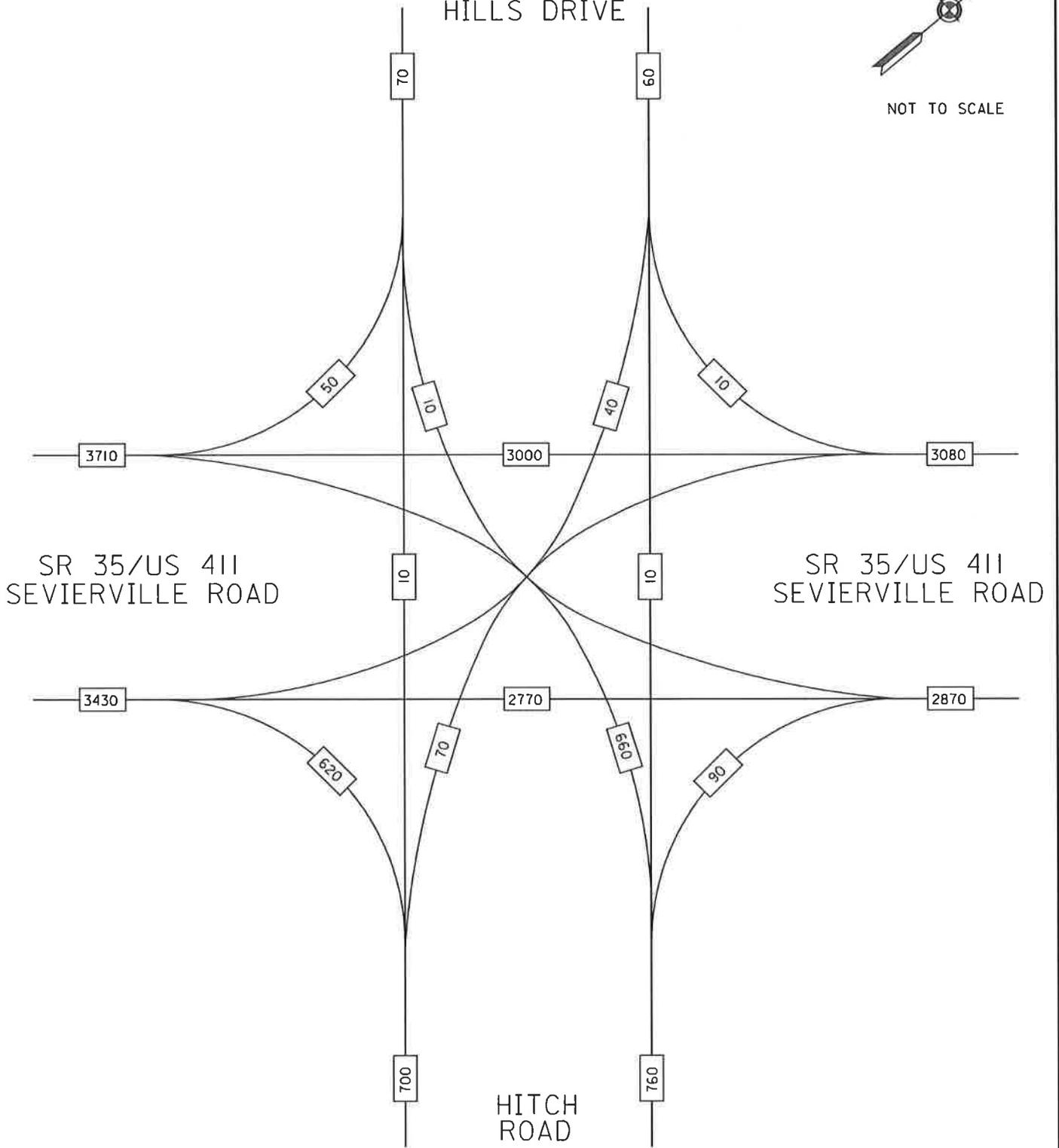
2010 AADT

SR 35/US 411/SEVIERVILLE ROAD @
PEPPERMINT ROAD

PEPPERMINT
HILLS DRIVE

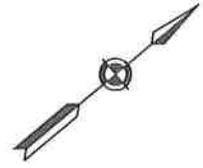


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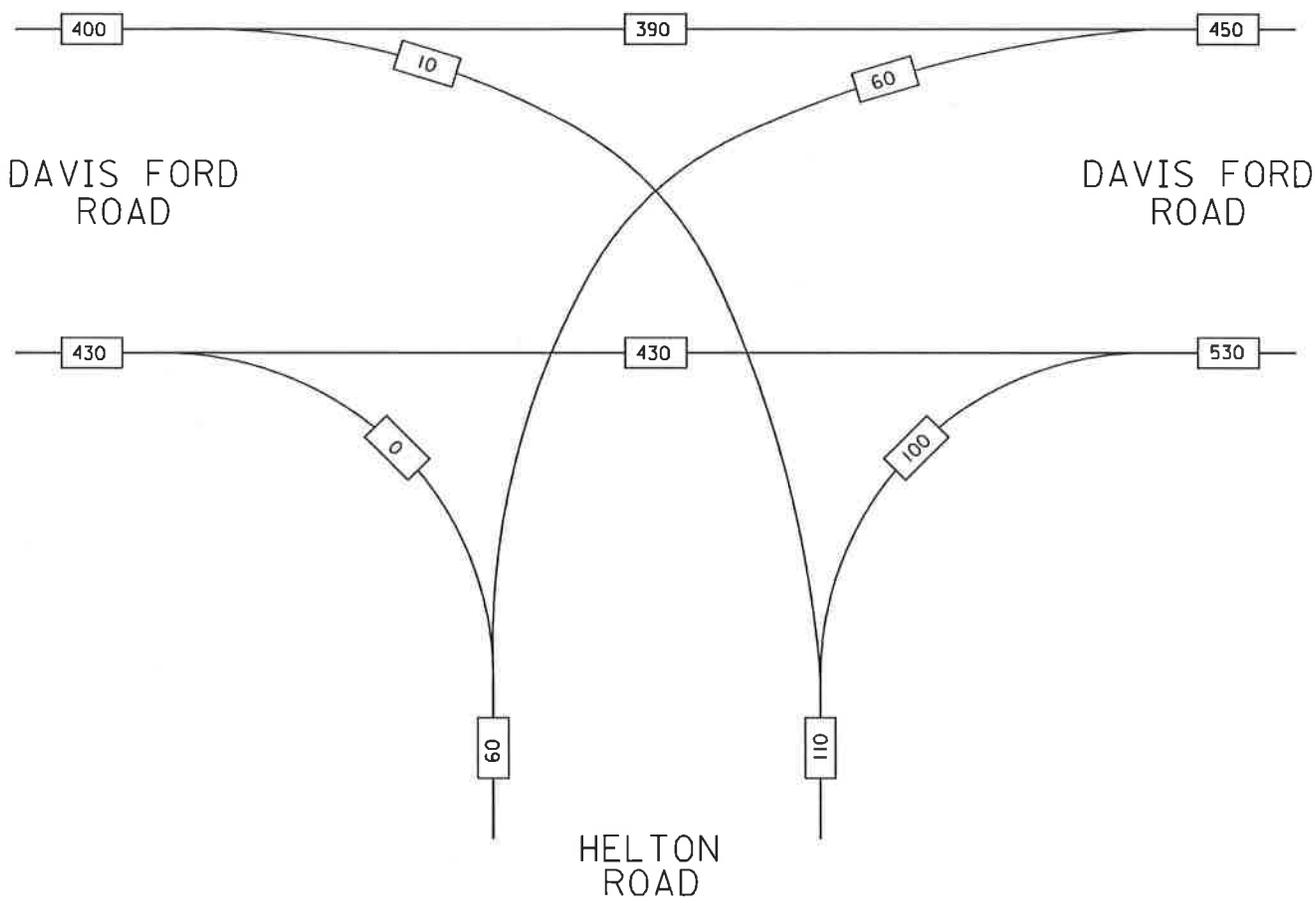


2010 AADT

SR 35/US 411/SEVIERVILLE ROAD @
HITCH ROAD/PEPPERMINT HILLS DR

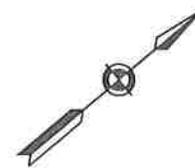


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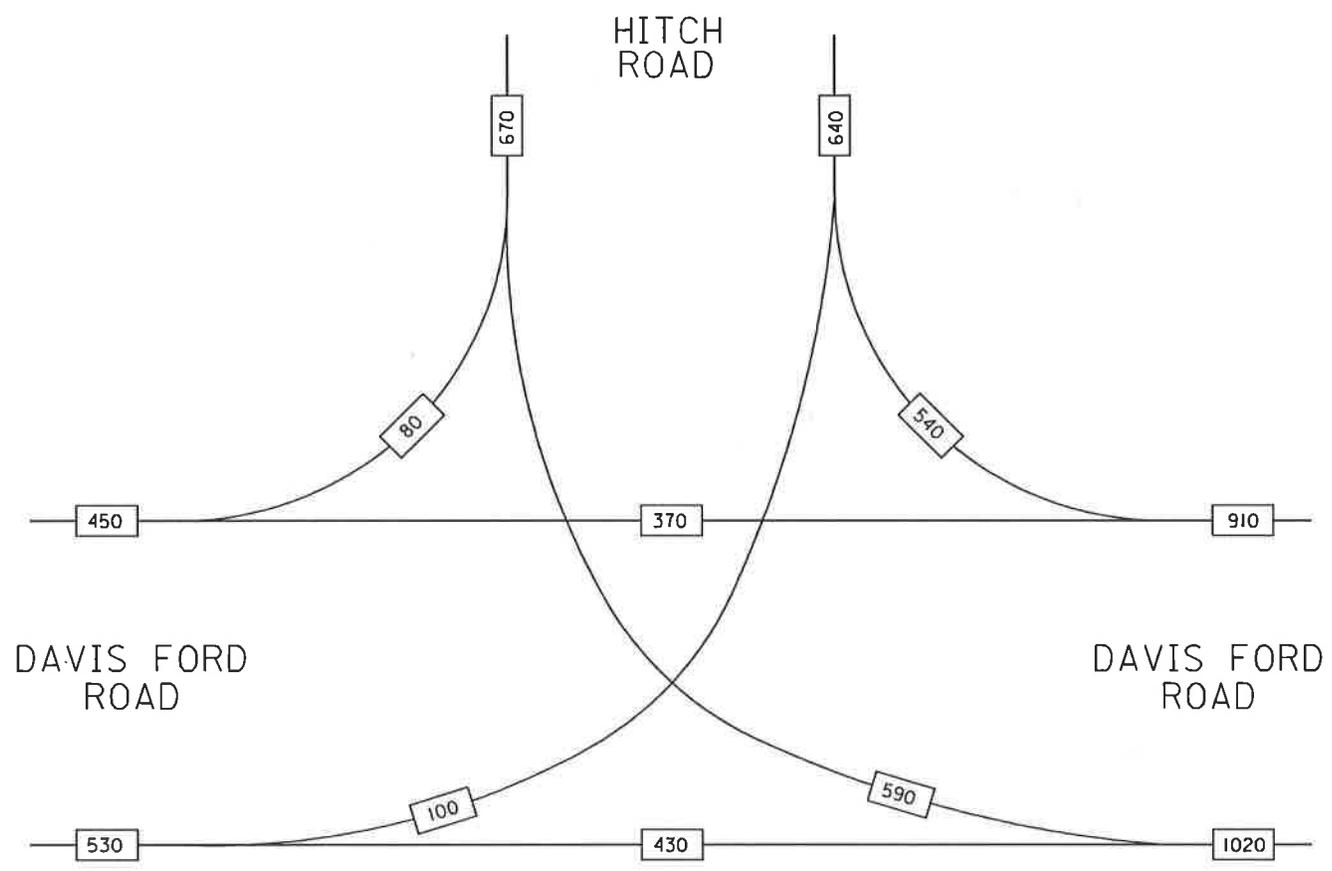


2010 AADT

DAVIS FORD ROAD @
HELTON ROAD



NOT TO SCALE

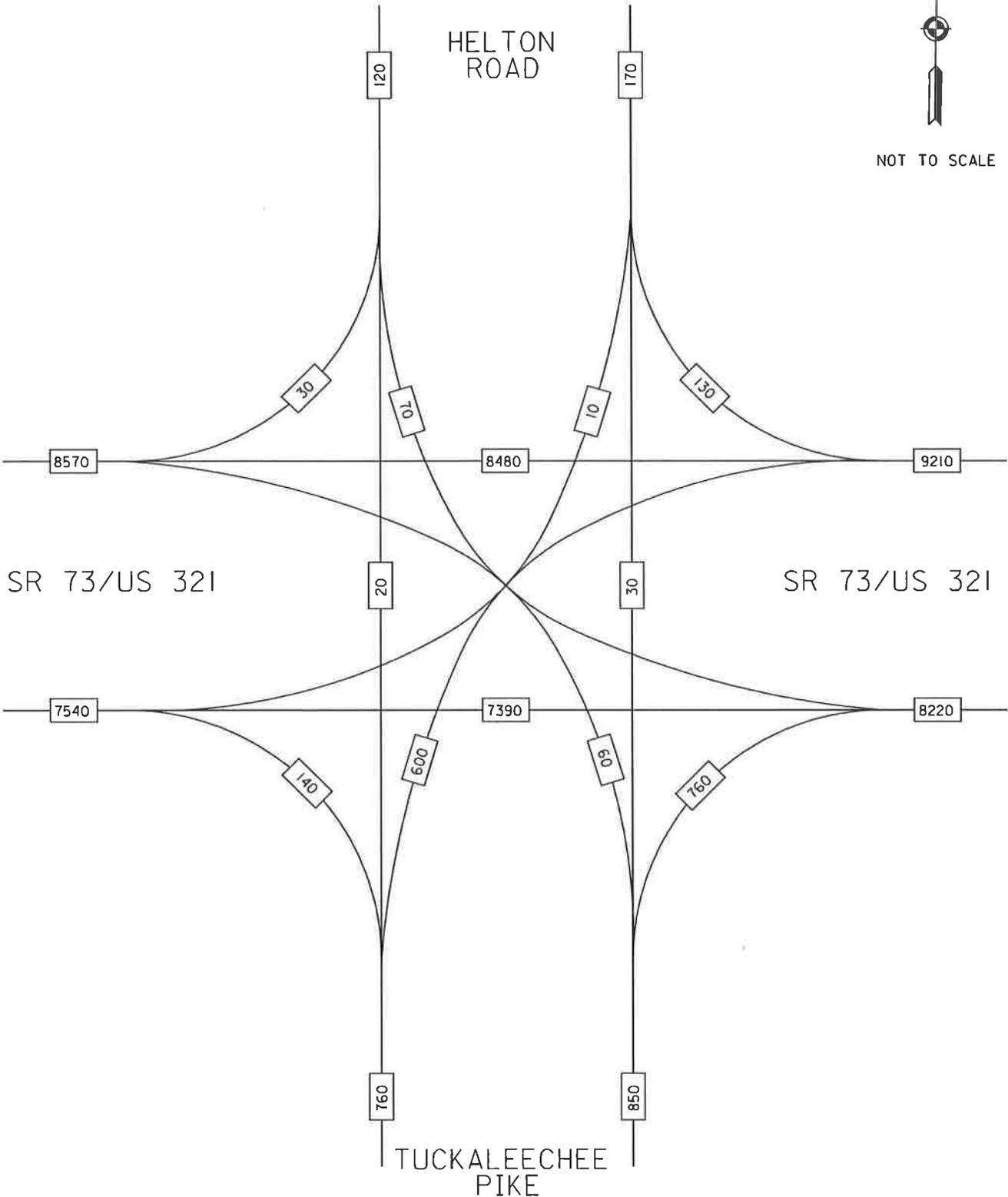


2010 AADT

DAVIS FORD ROAD @
HITCH ROAD



NOT TO SCALE



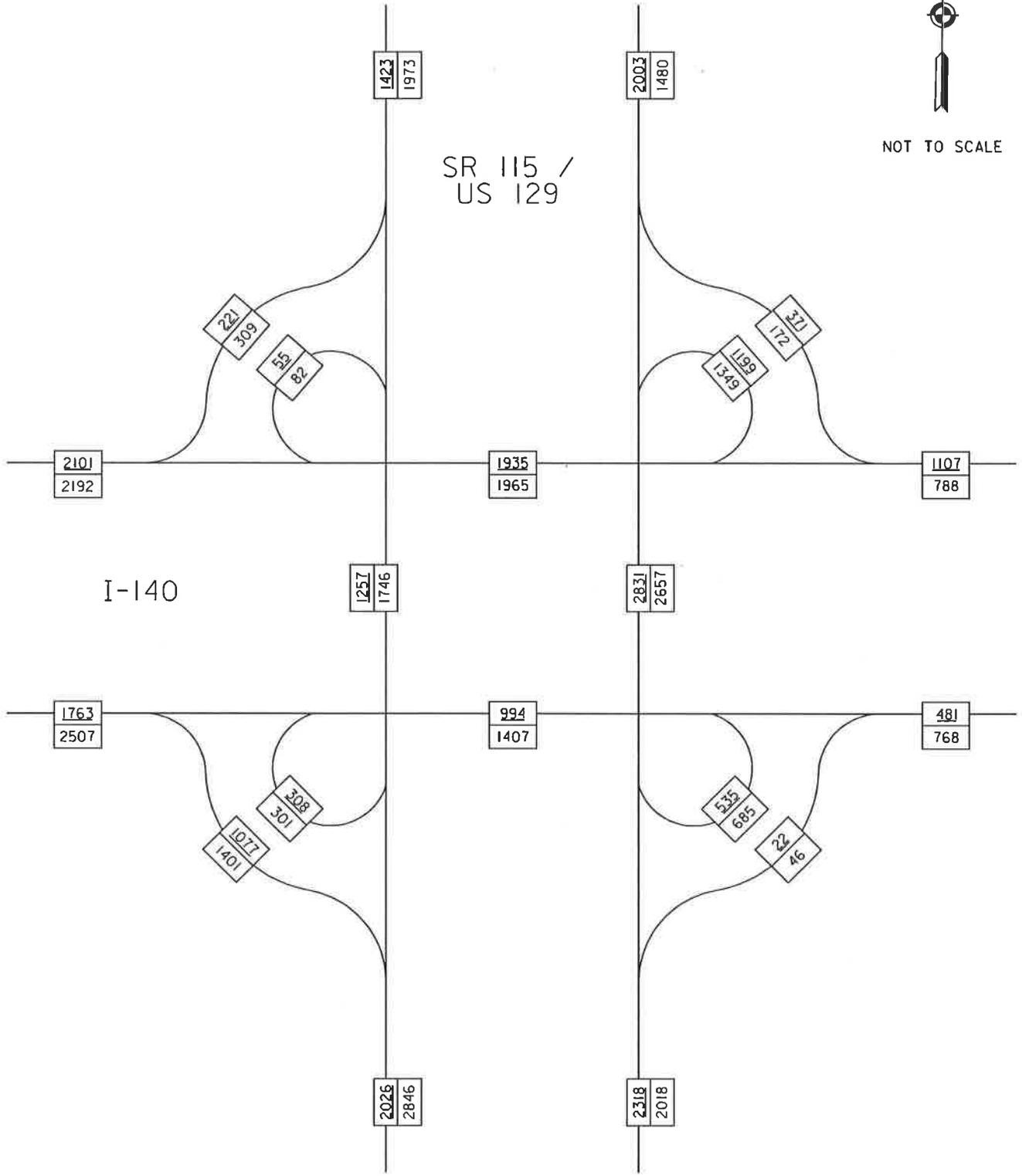
2010 AADT

SR 73/US 321 @
HELTON ROAD/TUCKALEECHEE PIKE



NOT TO SCALE

SR 115 /
US 129

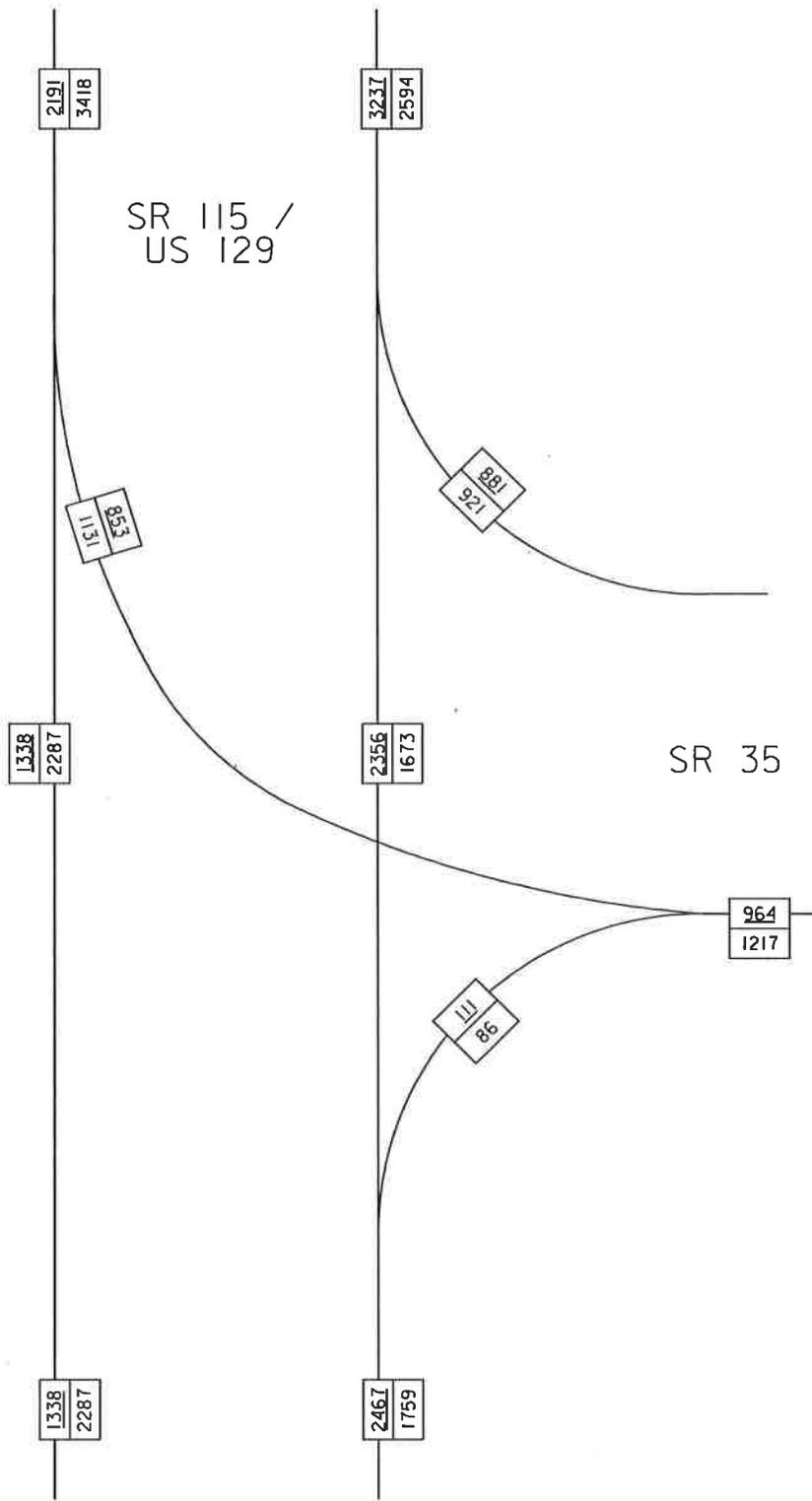


2013 DHV
AM/PM

SR 115/US 129 @
I-140 / PELLISSIPPI PARKWAY



NOT TO SCALE



SR 115 /
US 129

SR 35

2013 DHV
AM/PM

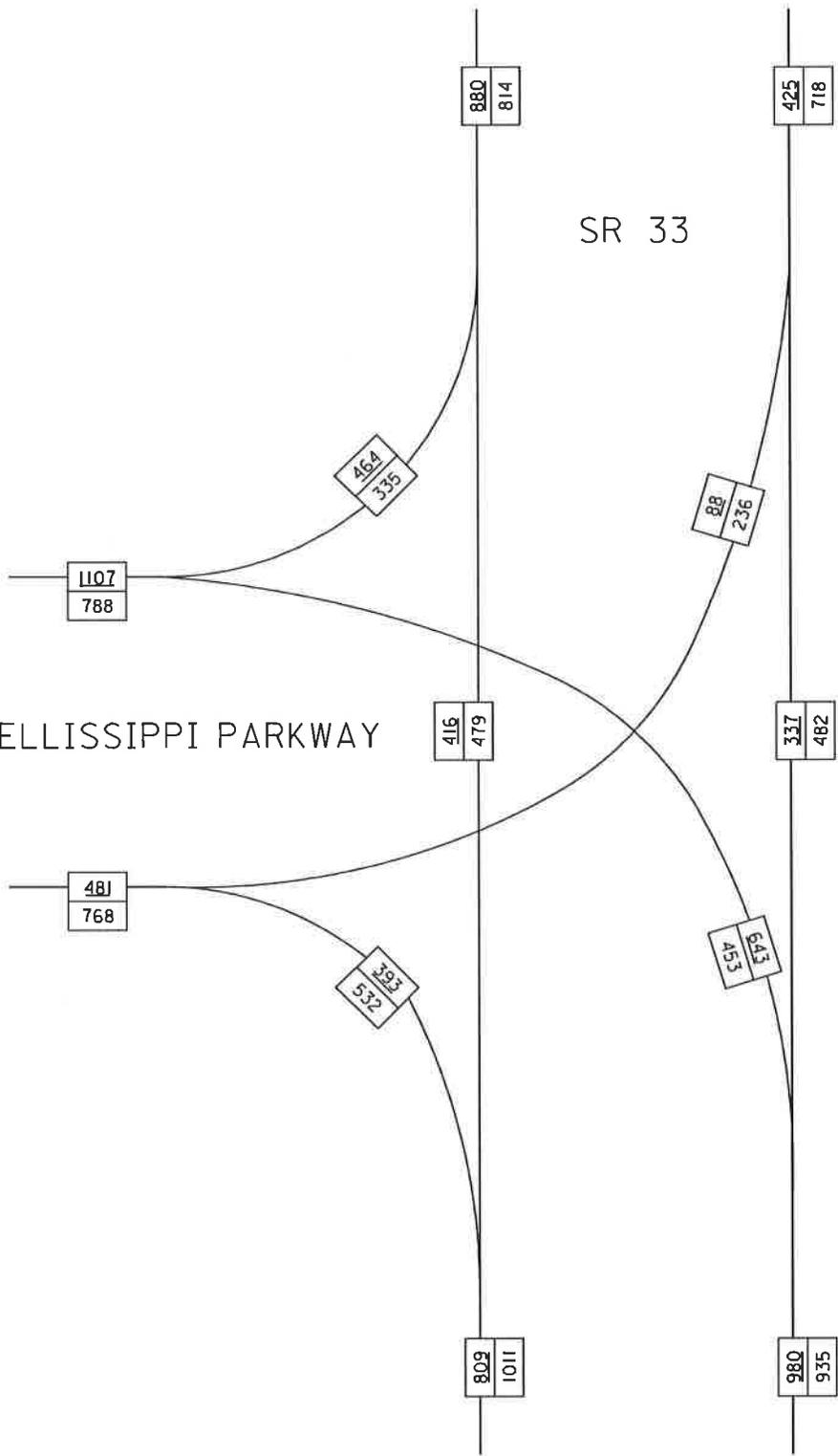
SR 115/US 129 @ SR 35



NOT TO SCALE

SR 33

PELLISSIPPI PARKWAY

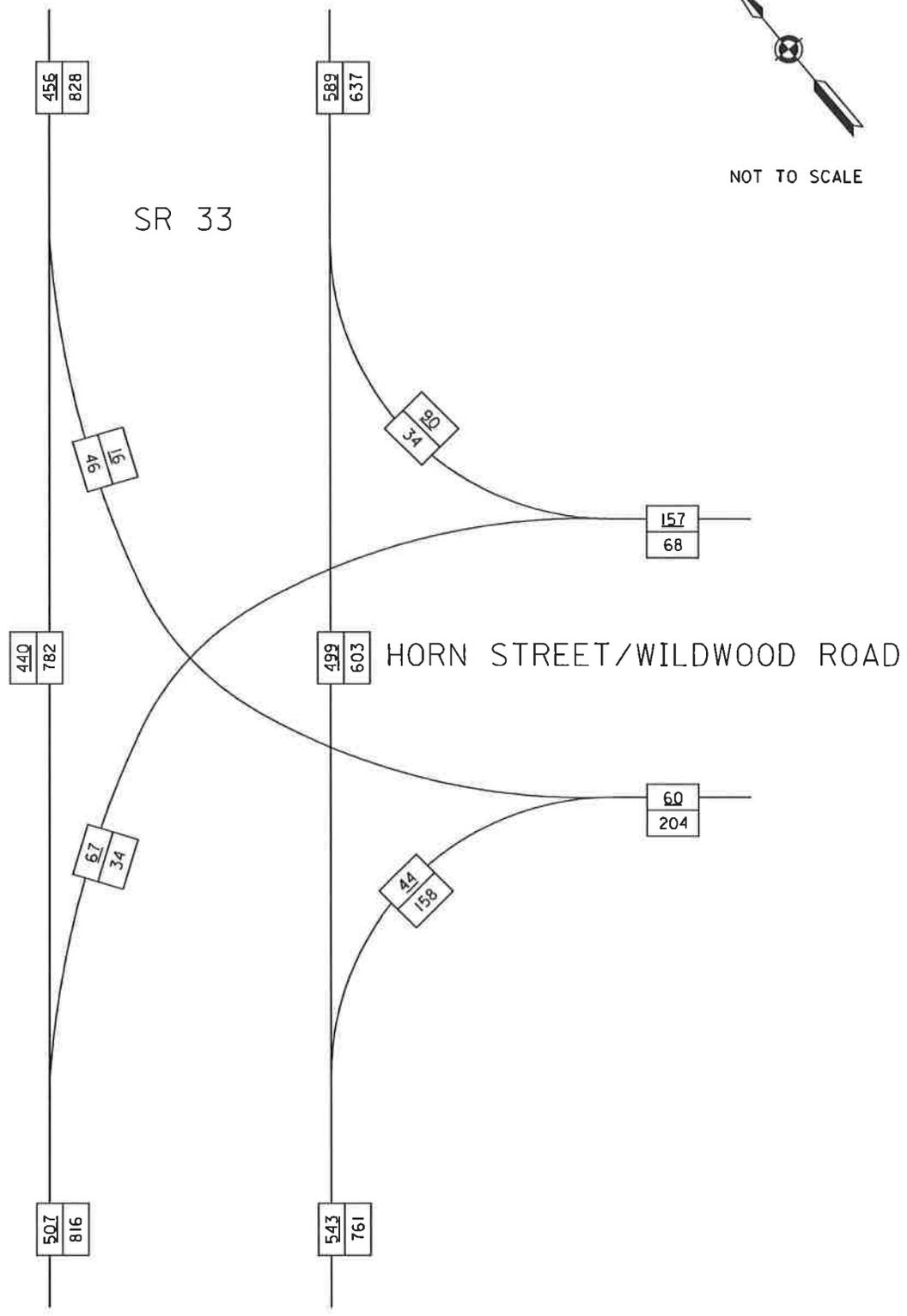


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AM/PM

SR 33 @ PELLISSIPPI PARKWAY



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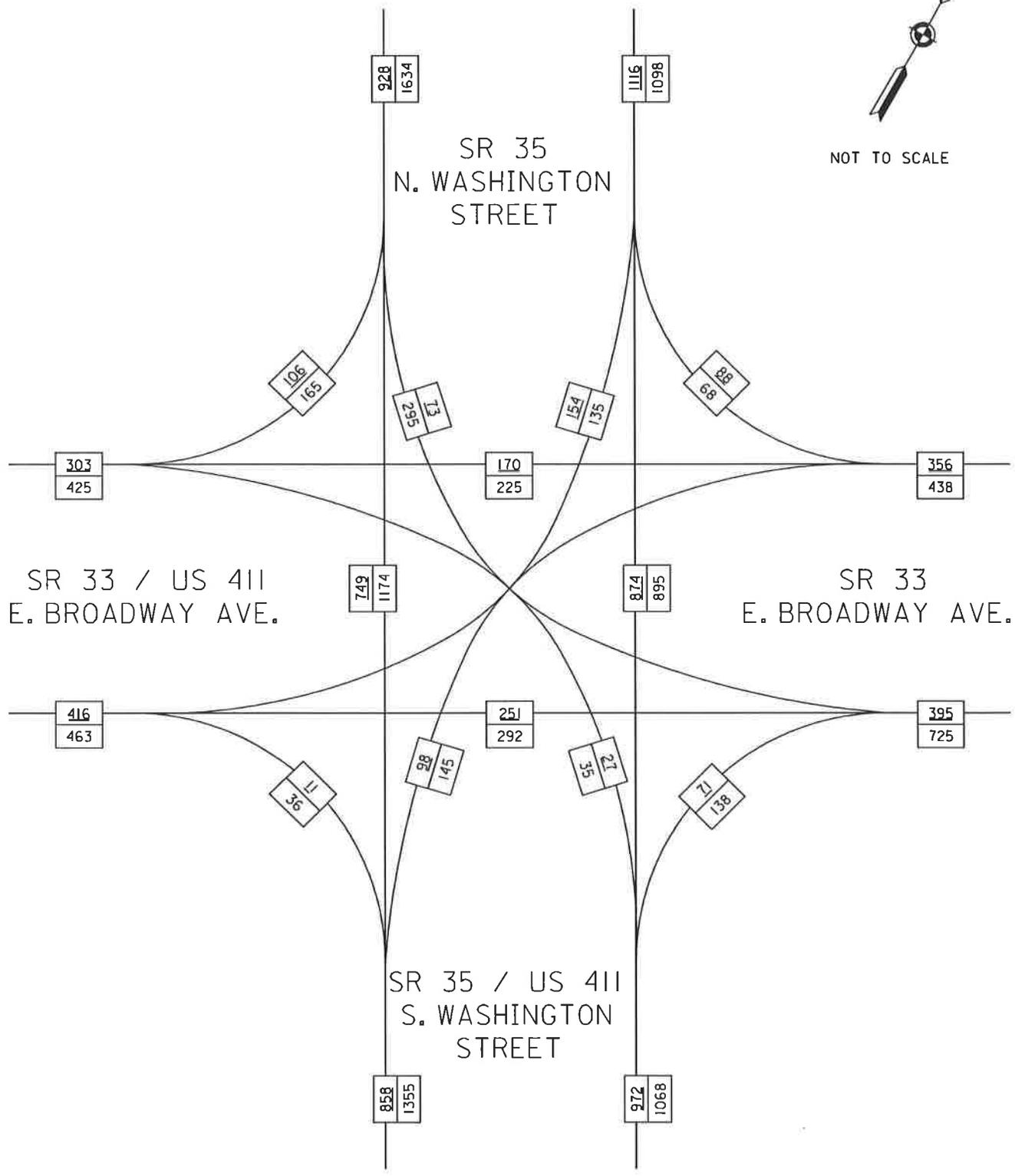


2013 DHV
AM/PM

SR 33 @ HORN STREET/
WILDWOOD ROAD



NOT TO SCALE



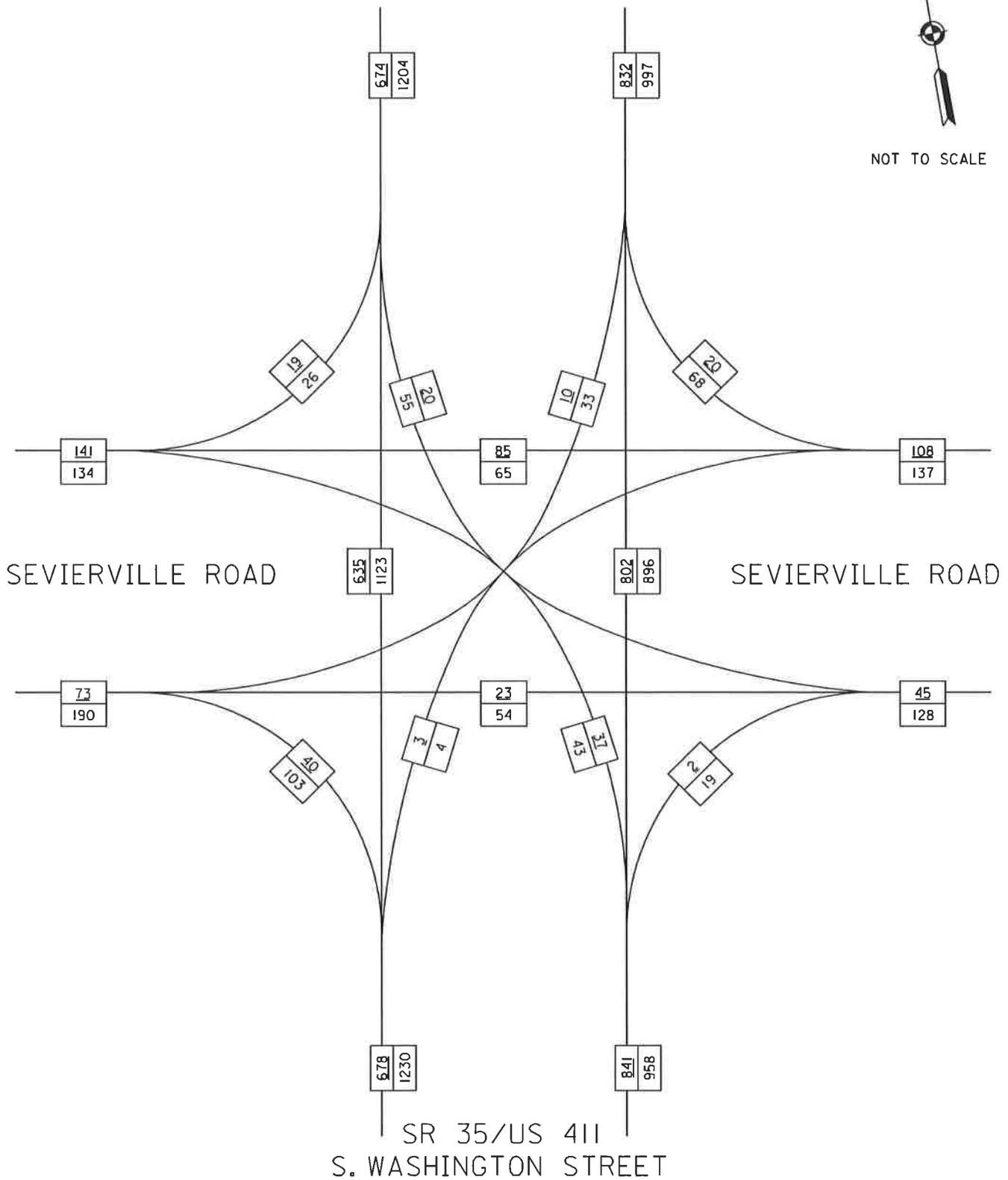
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AM/PM

SR 33 @ SR 35

SR 35/
N. WASHINGTON STREET



NOT TO SCALE

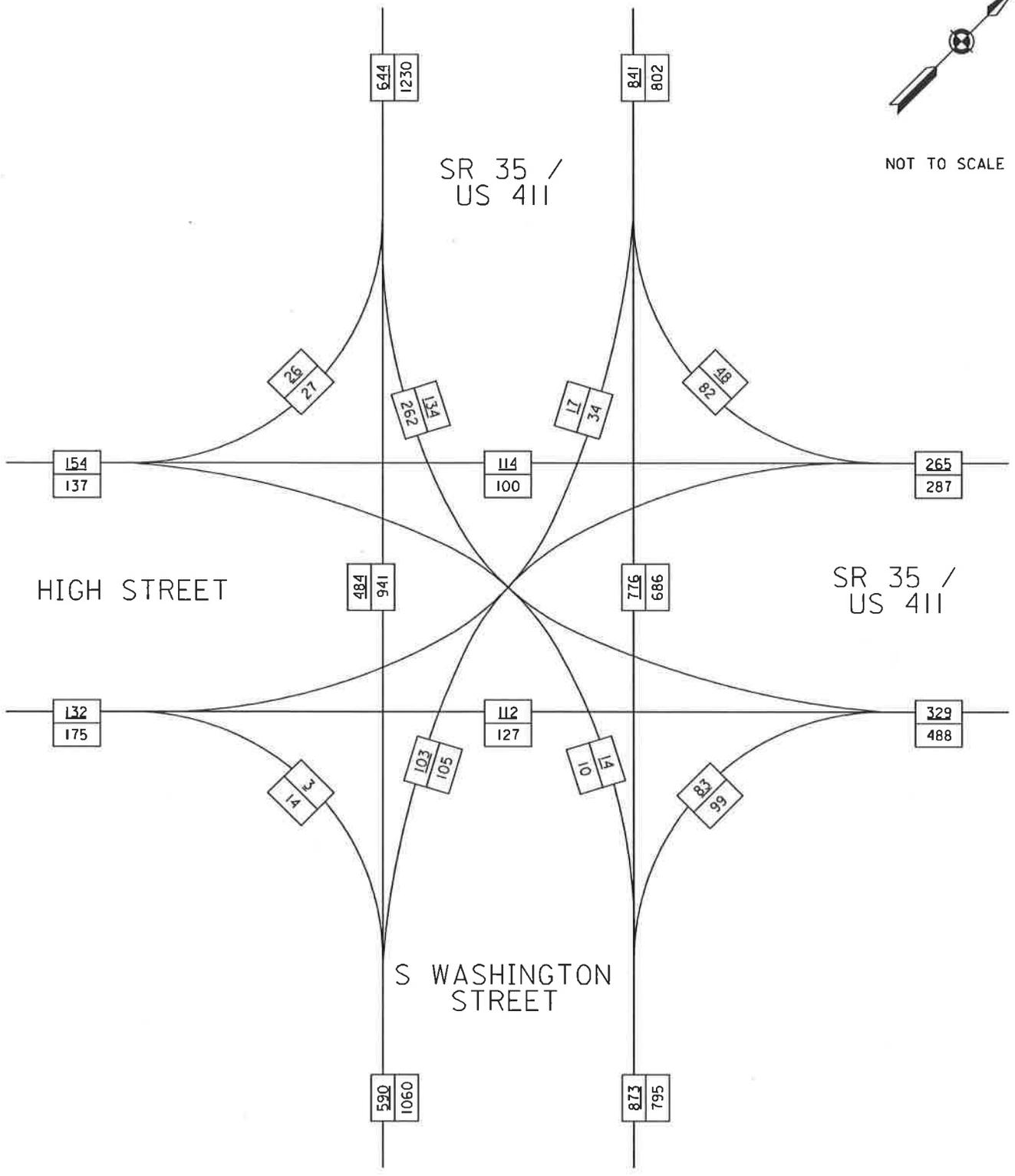


2011 DHV
AM/PM

SEVIERVILLE ROAD @
SR 35/WASHINGTON STREET



NOT TO SCALE

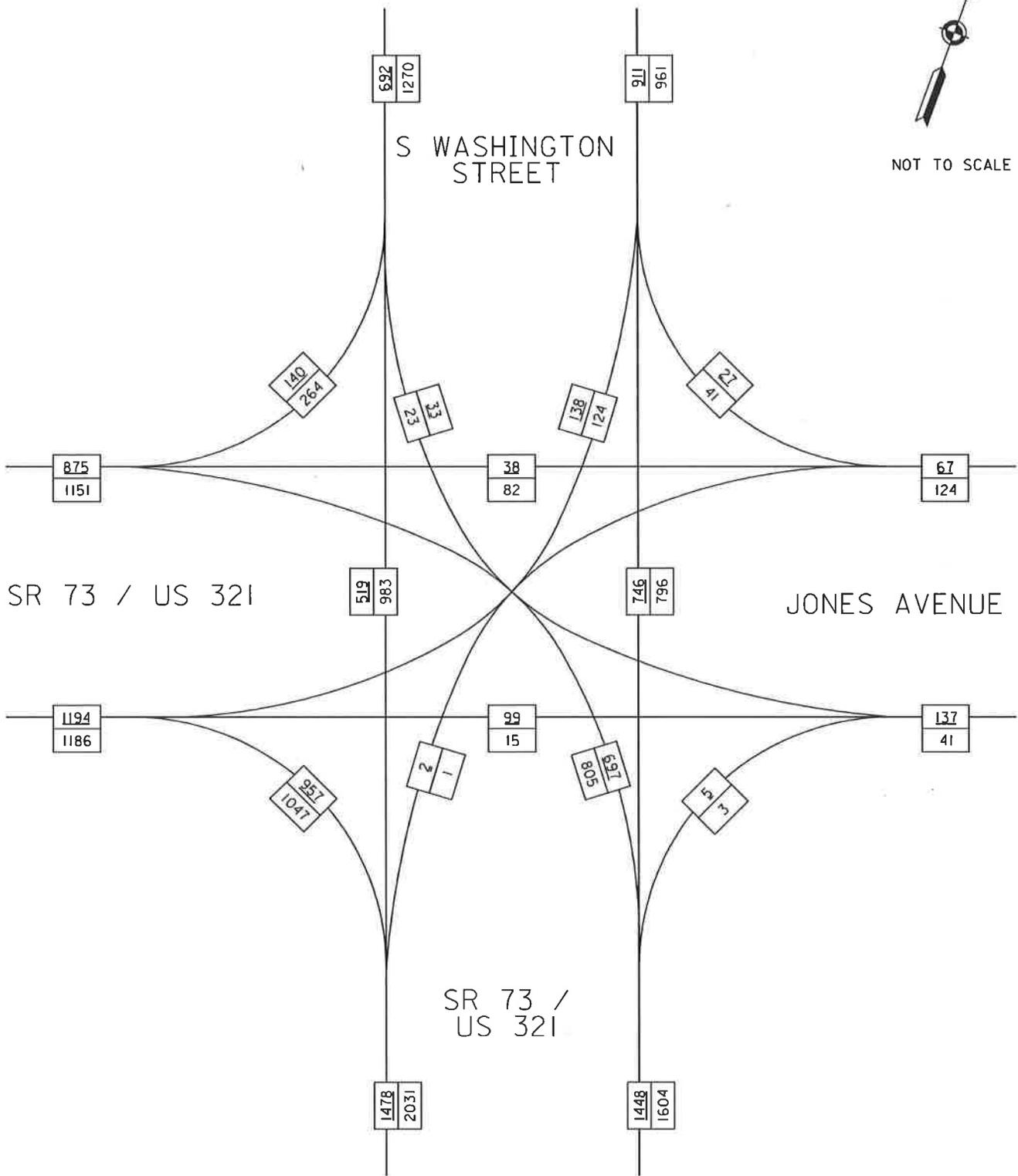


2011 DHV
AM/PM

S WASHINGTON ST / SR 35
@ HIGH ST / SR 35



NOT TO SCALE

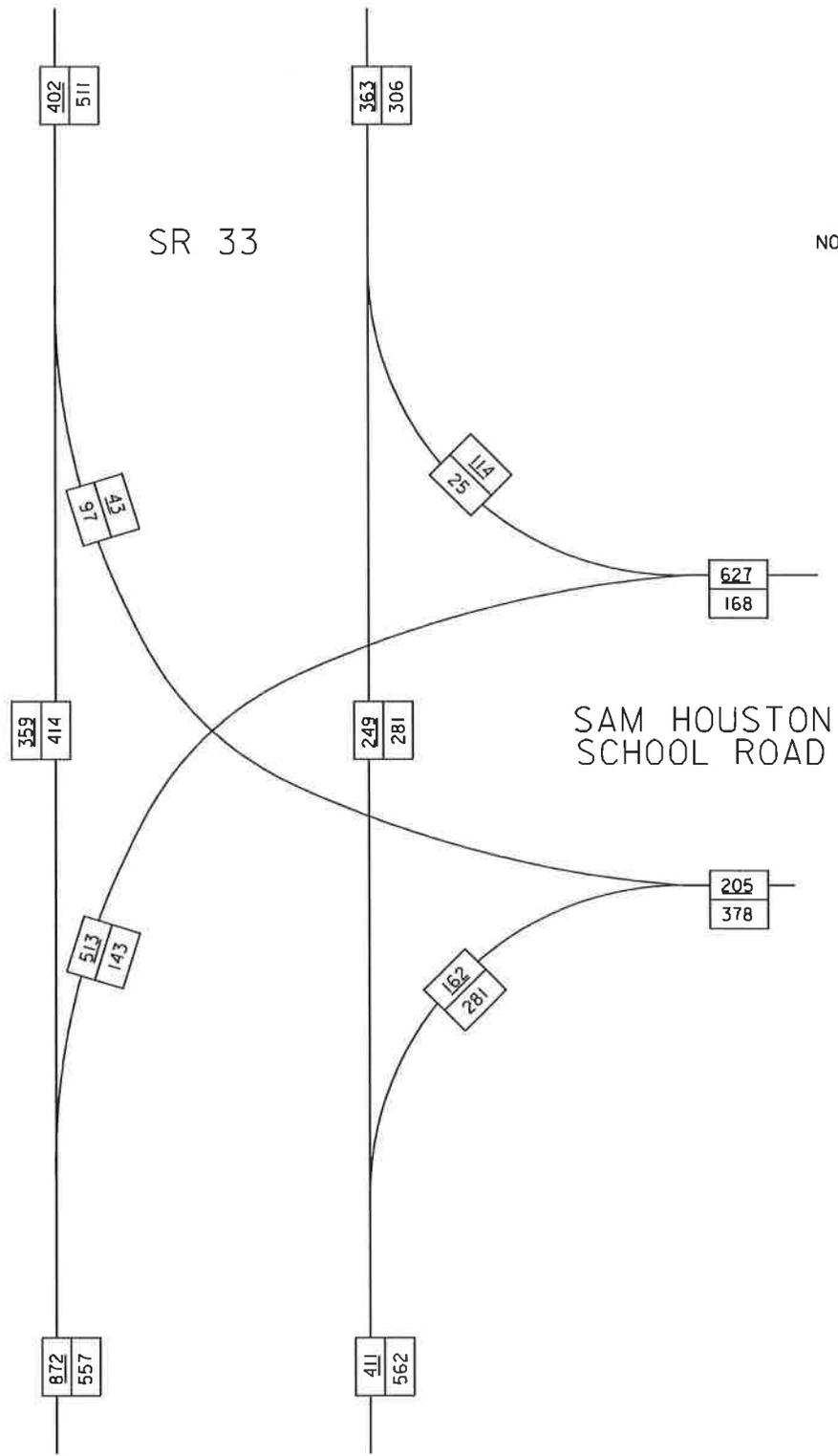


2013 DHV
AM/PM

S WASHINGTON ST
@ SR 73/ US 321

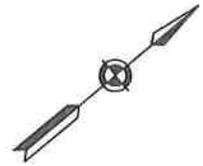


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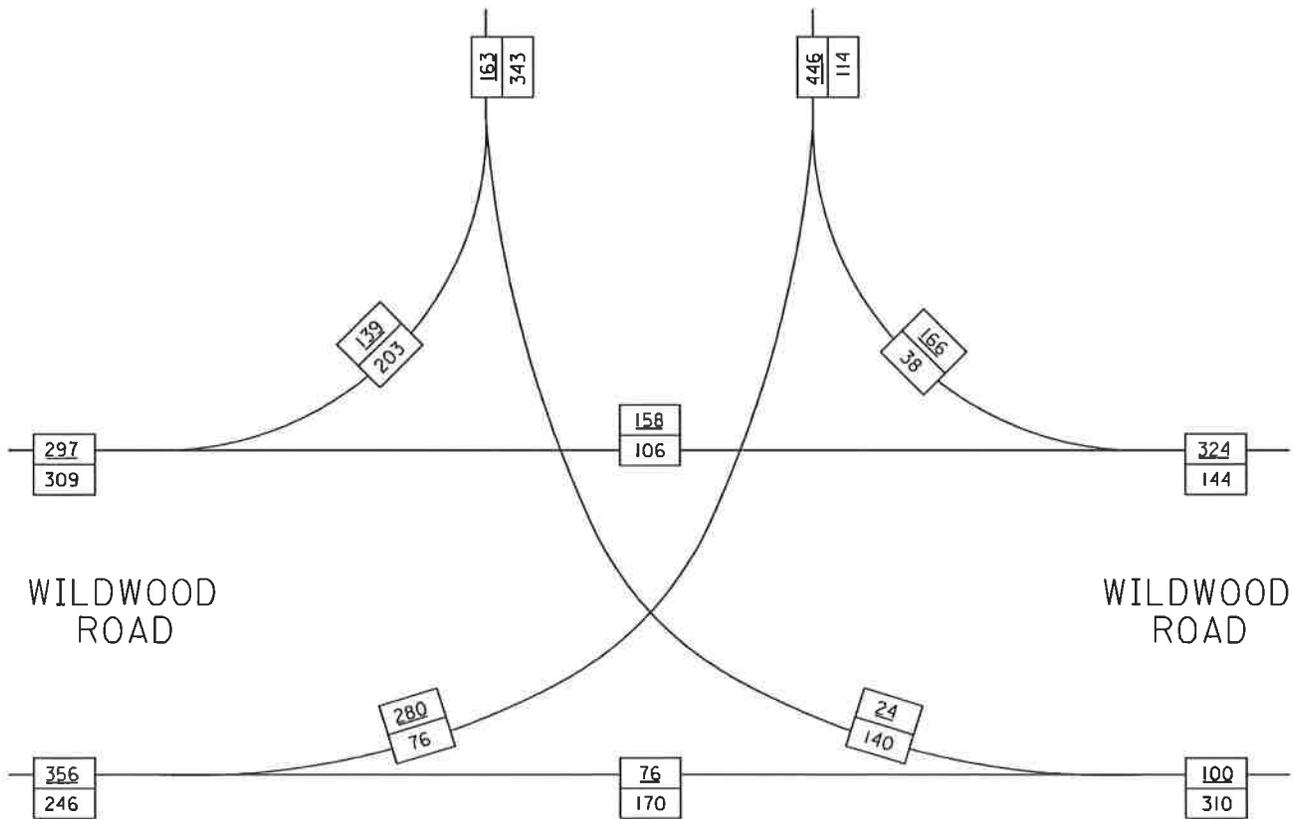
2010 DHV
AM/PM

SR 33 @
SAM HOUSTON SCHOOL ROAD



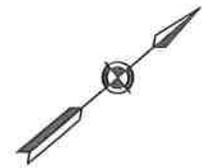
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SAM HOUSTON SCHOOL ROAD

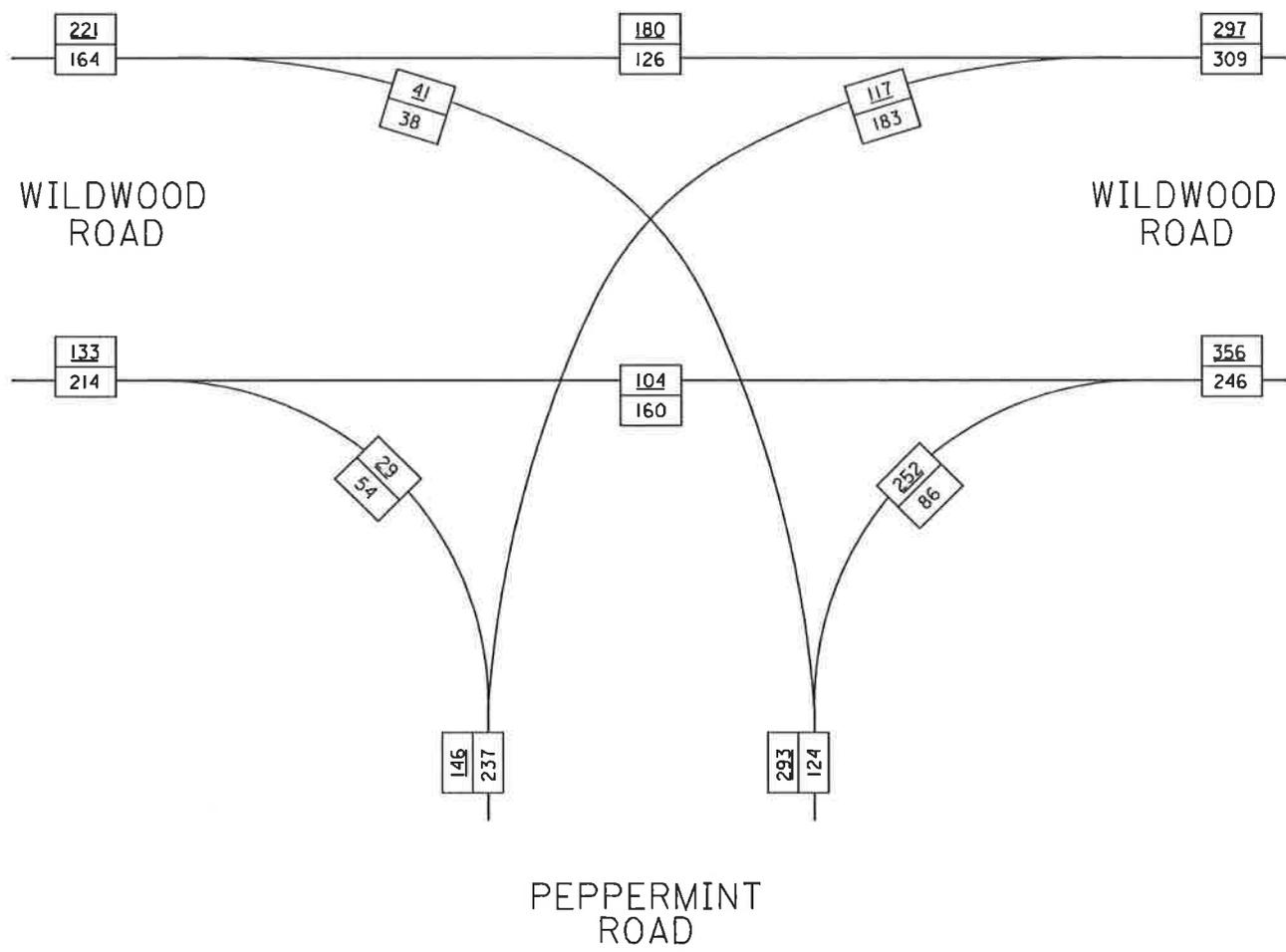


2010 DHV
AM/PM

SAM HOUSTON SCHOOL ROAD @
WILDWOOD ROAD

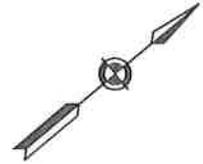


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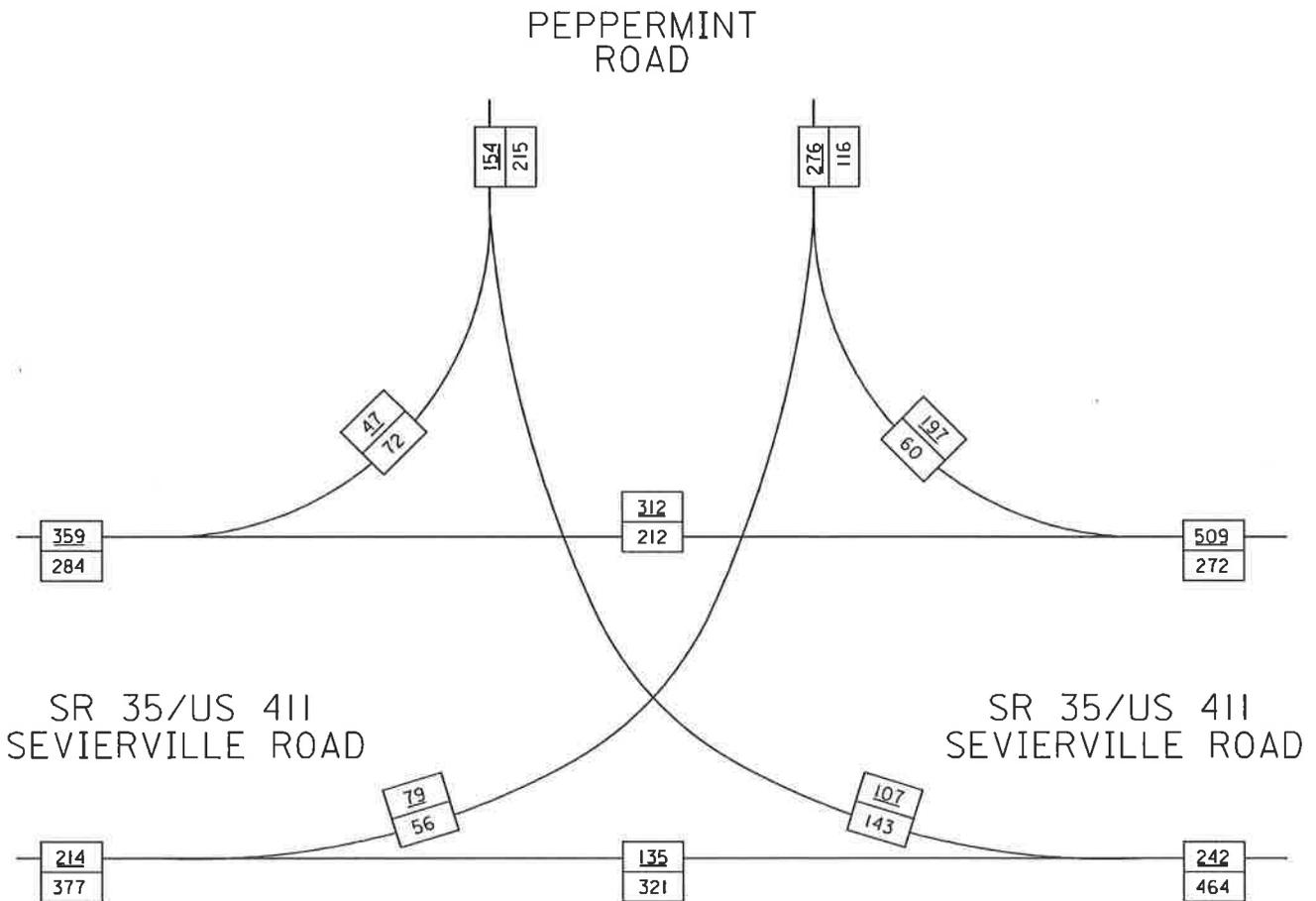


2010 DHV
AM/PM

PEPPERMINT ROAD @
WILDWOOD ROAD



NOT TO SCALE



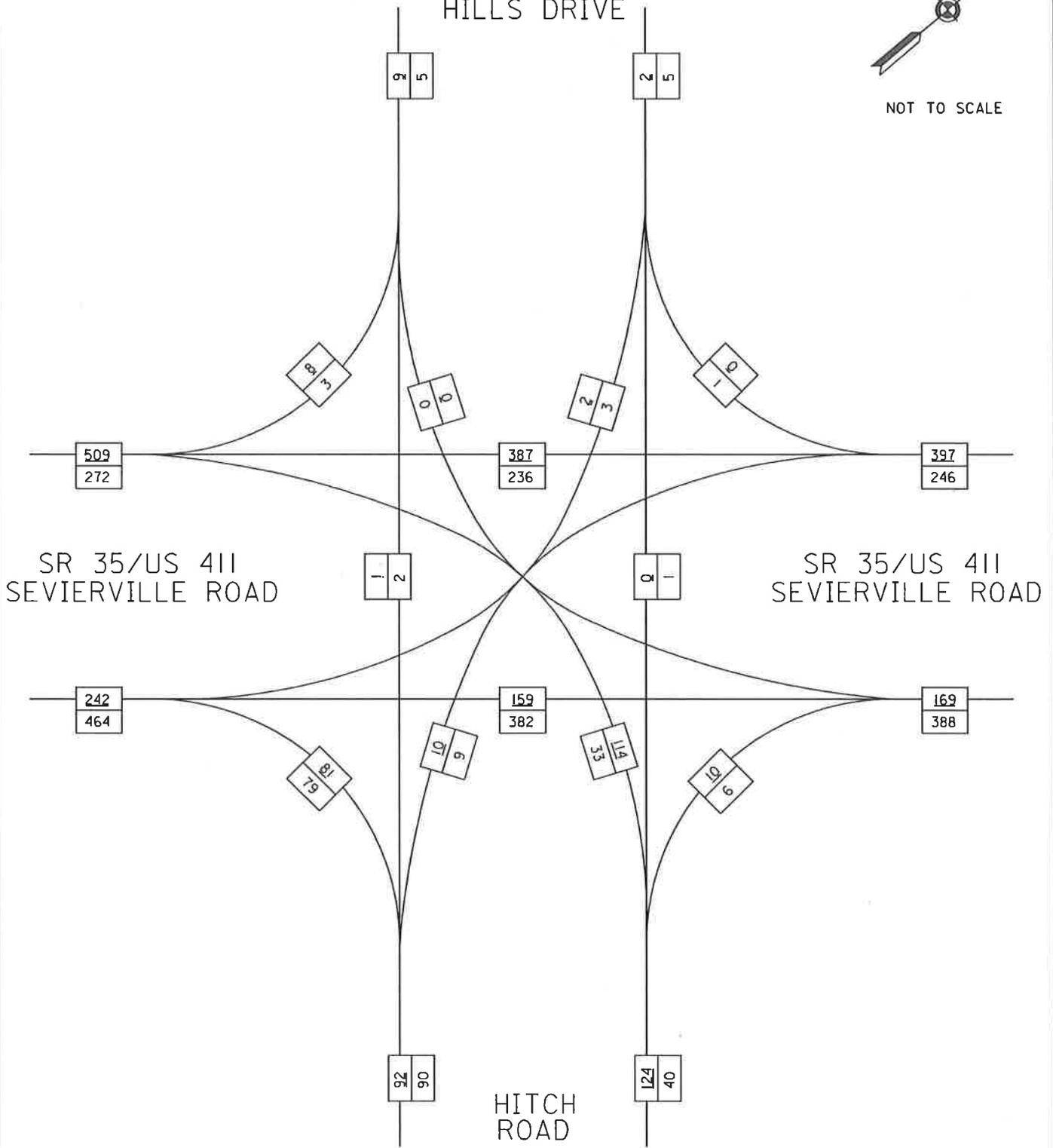
2010 DHV
AM/PM

SR 35/US 411/SEVIERVILLE ROAD @
PEPPERMINT ROAD

PEPPERMINT HILLS DRIVE

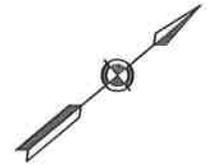


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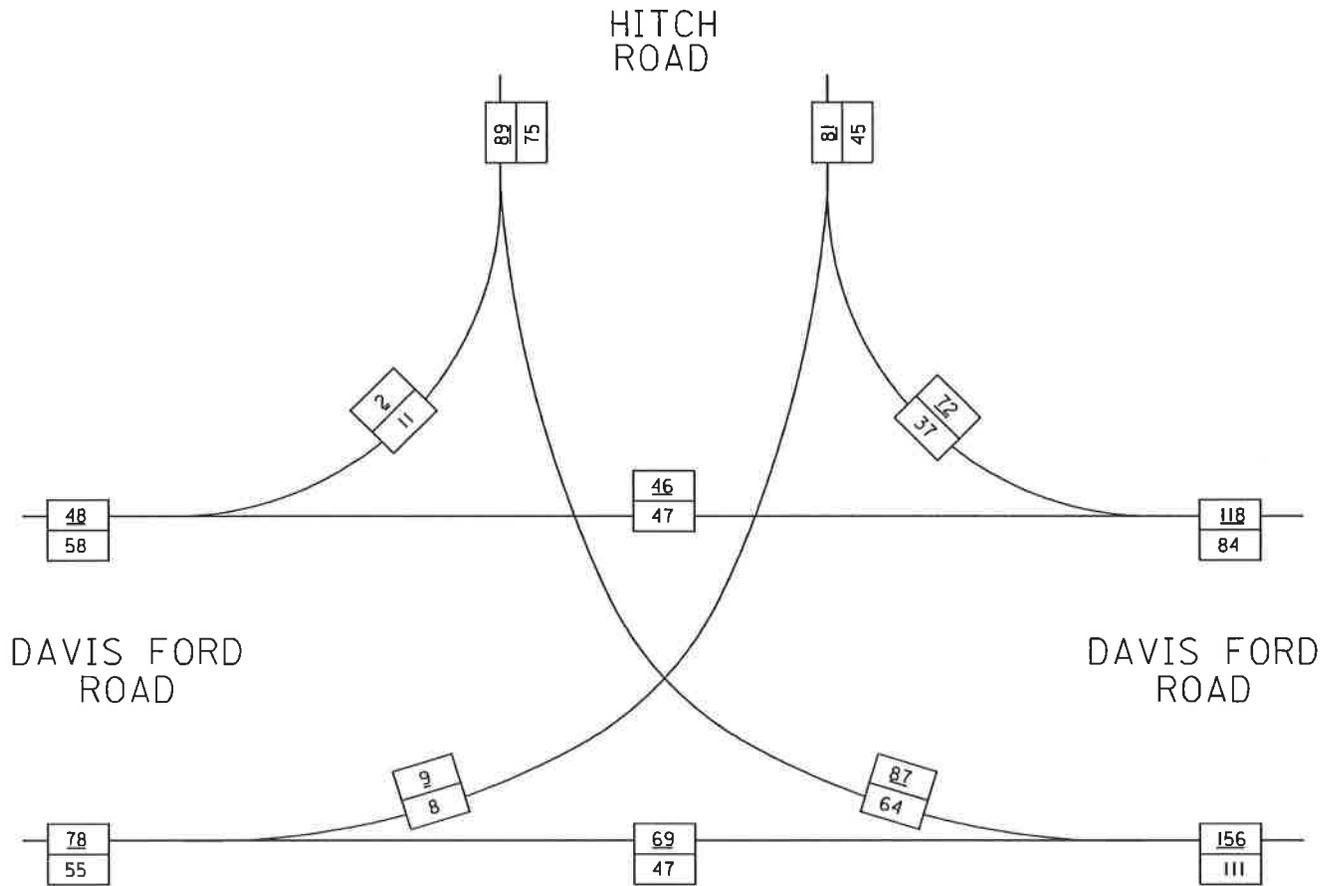


2010 DHV
AM/PM

SR 35/US 411/SEVIERVILLE ROAD @
HITCH ROAD/PEPPERMINT HILLS DR

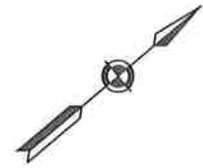


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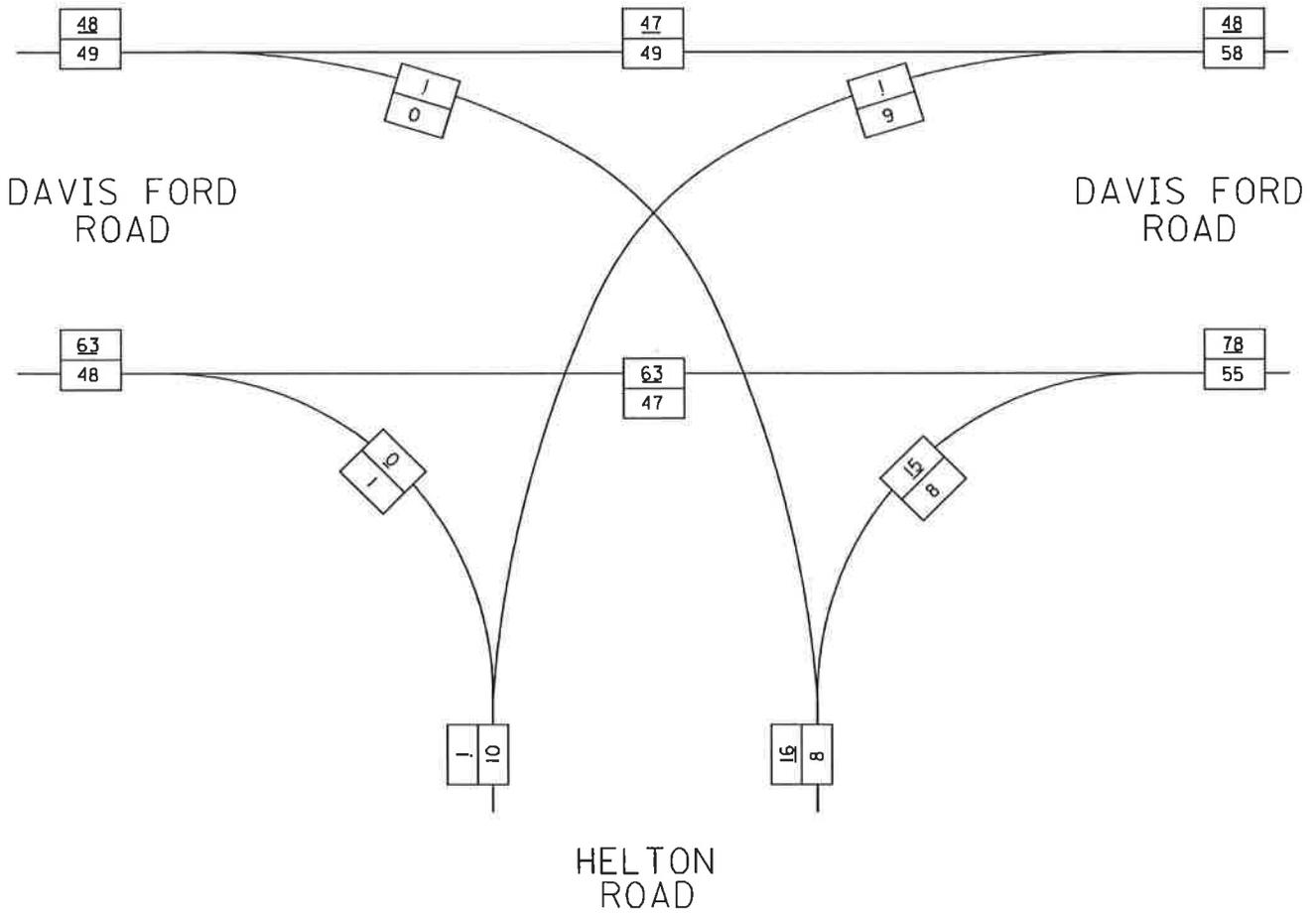


2010 DHV
AM/PM

DAVIS FORD ROAD @
HITCH ROAD



NOT TO SCALE

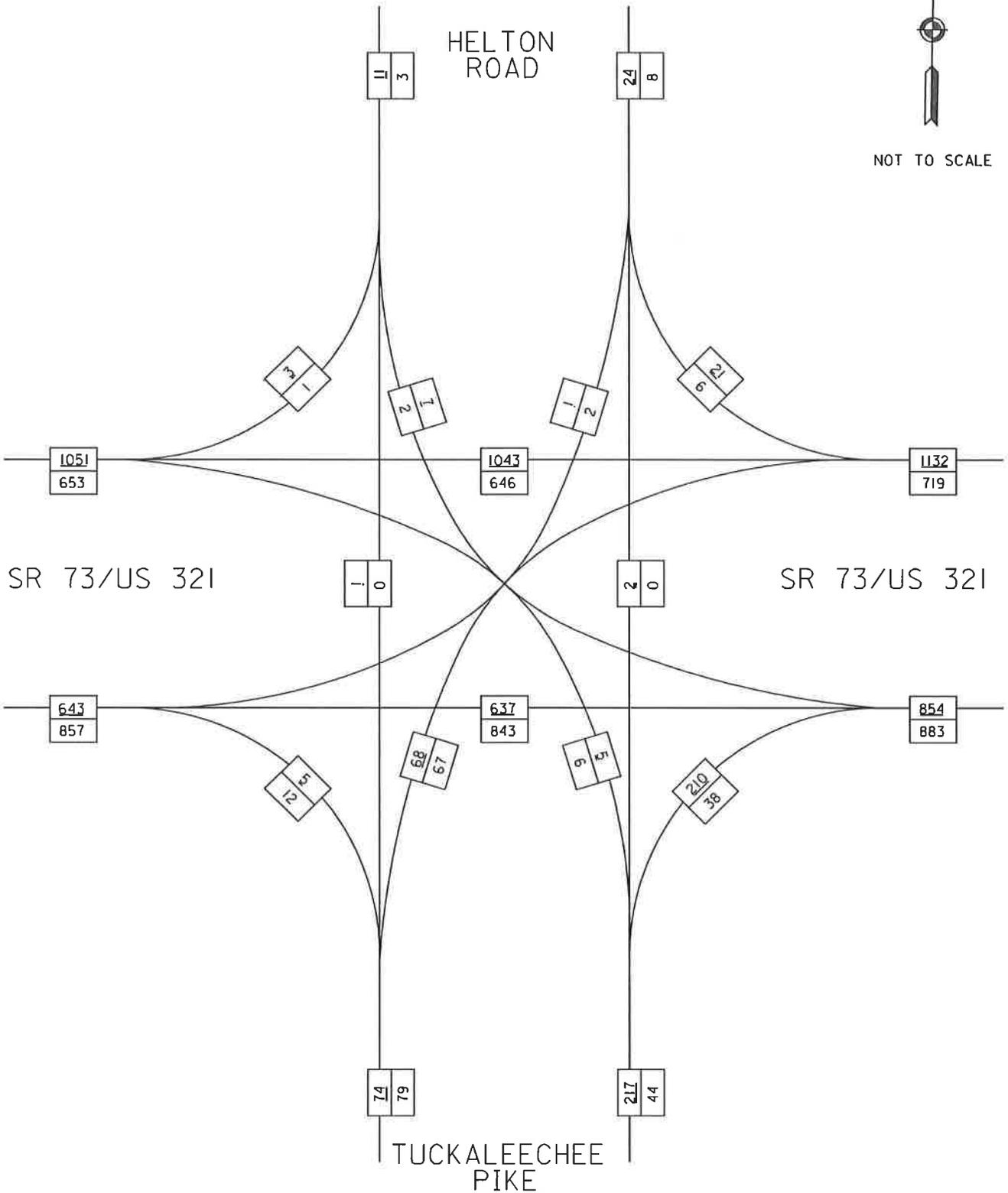


2010 DHV
AM/PM

DAVIS FORD ROAD @
HELTON ROAD



NOT TO SCALE



2010 DHV
AM/PM

SR 73/US 321 @
HELTON ROAD/TUCKALEECHEE PIKE



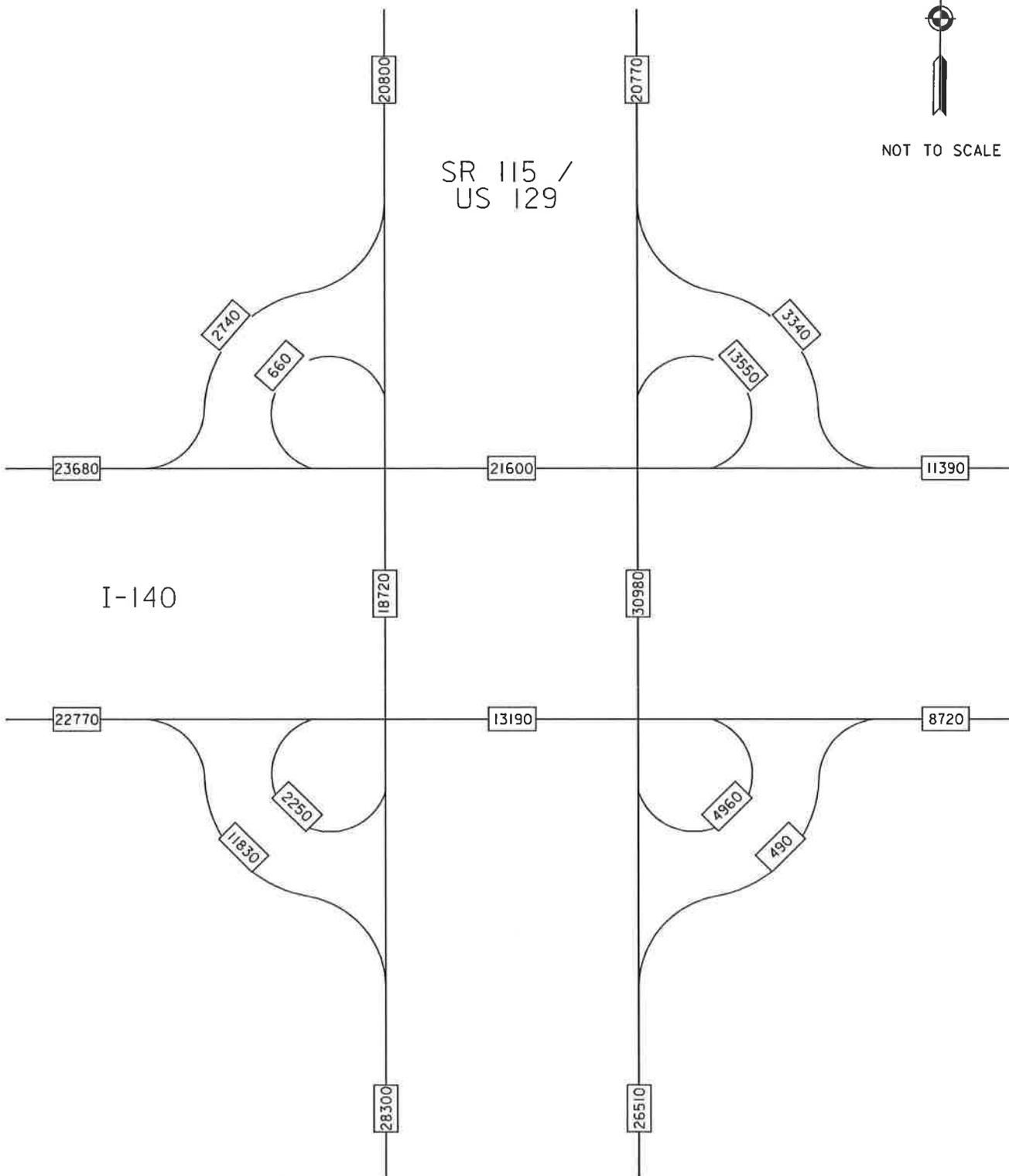
LEGEND	
O0000*	- 2010 AADT
O0000***	- 2012 AADT
O0000	- 2013 AADT
(O0000)	- 2020 AADT
[O0000]	- 2040 AADT
X%	- % TRUCKS

AADT SEGMENT VOLUMES WITHOUT PELLISSIPPI PARKWAY EXTENSION



NOT TO SCALE

SR 115 /
US 129



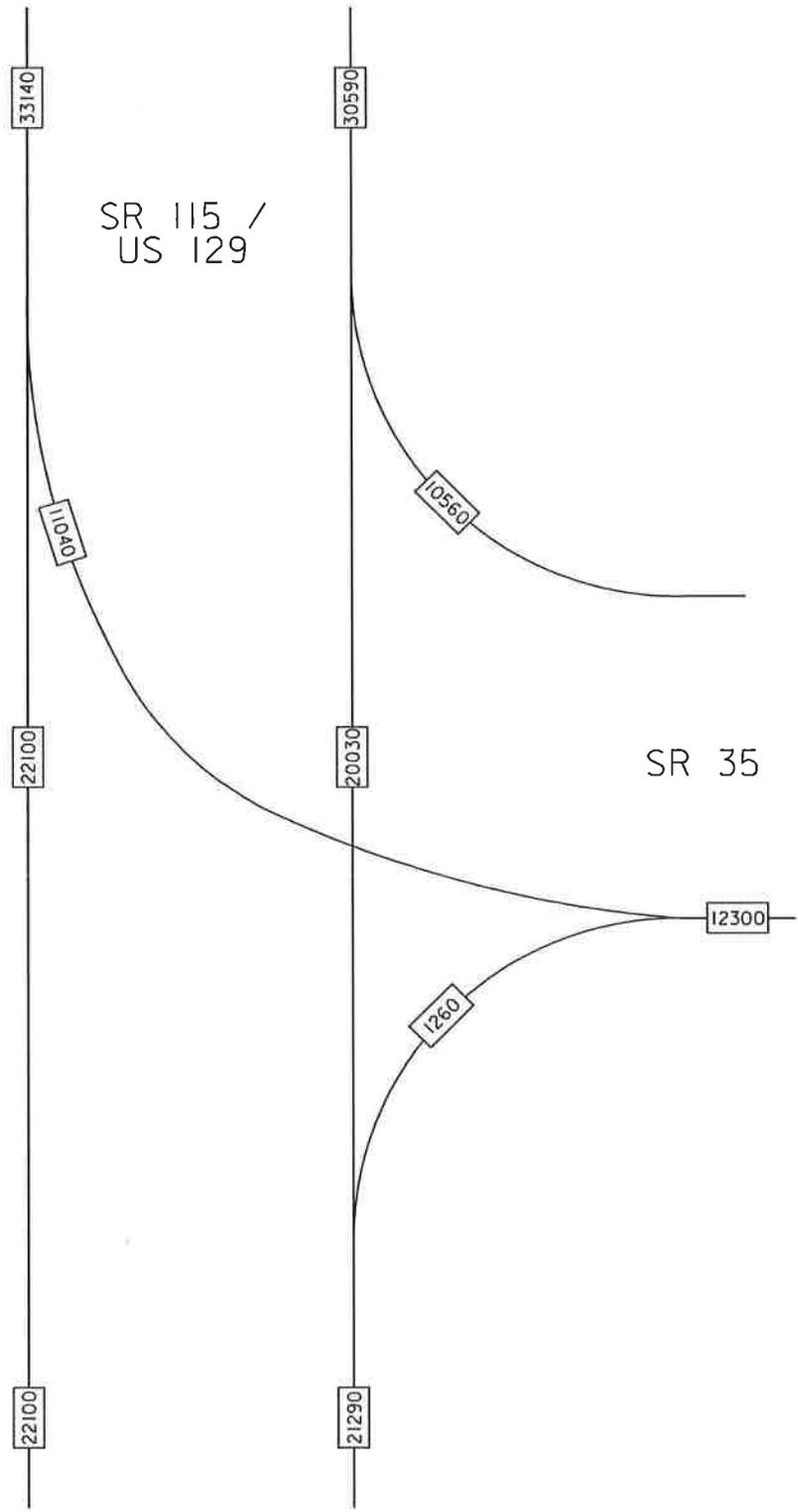
I-140

2020 AADT NO PPE

SR 115/US 129 @
I-140 / PELLISSIPPI PARKWAY



NOT TO SCALE

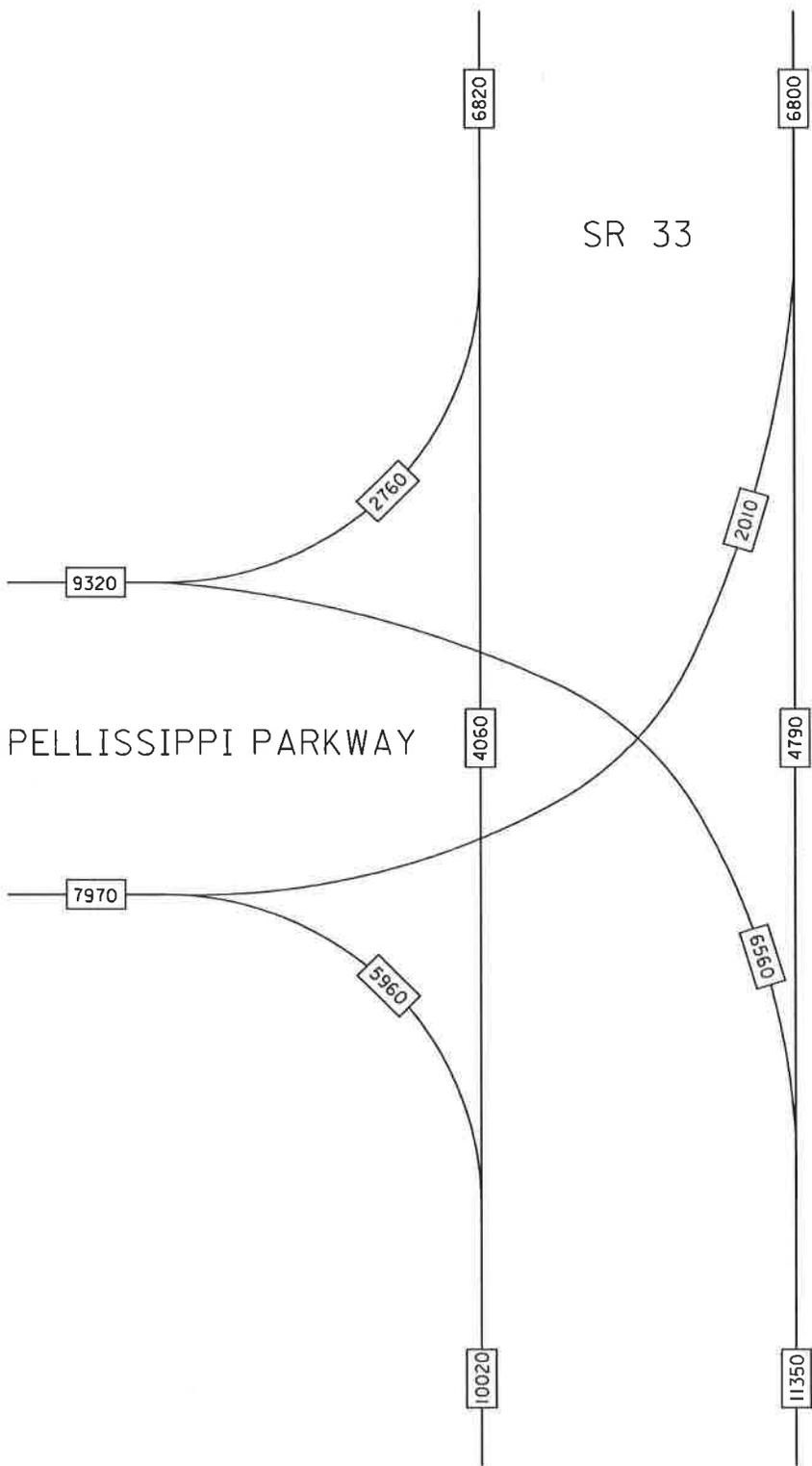


2020 AADT NO PPE

SR 115/US 129 @ SR 35



NOT TO SCALE

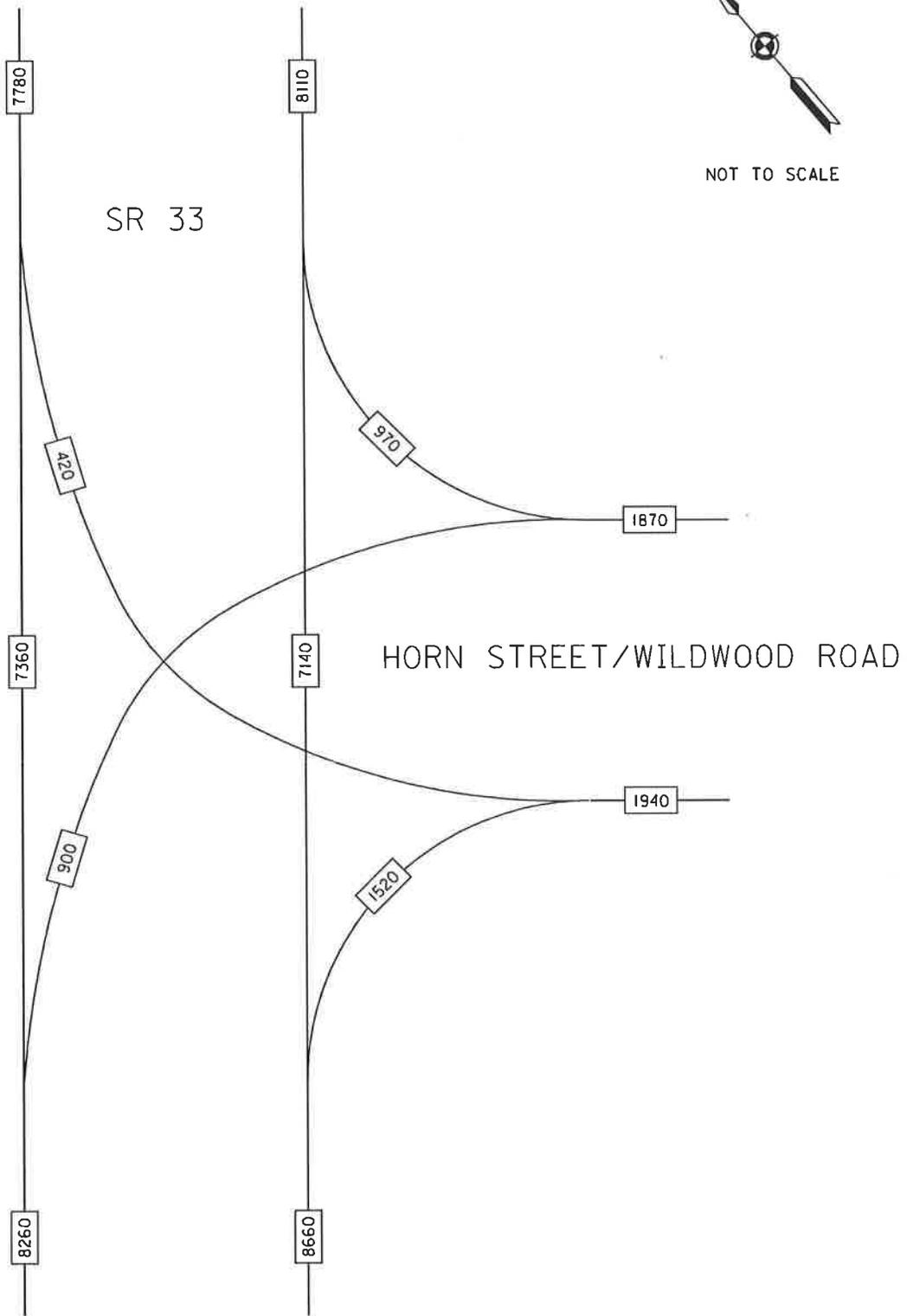


2020 AADT NO PPE

SR 33 @ PELLISSIPPI PARKWAY



NOT TO SCALE

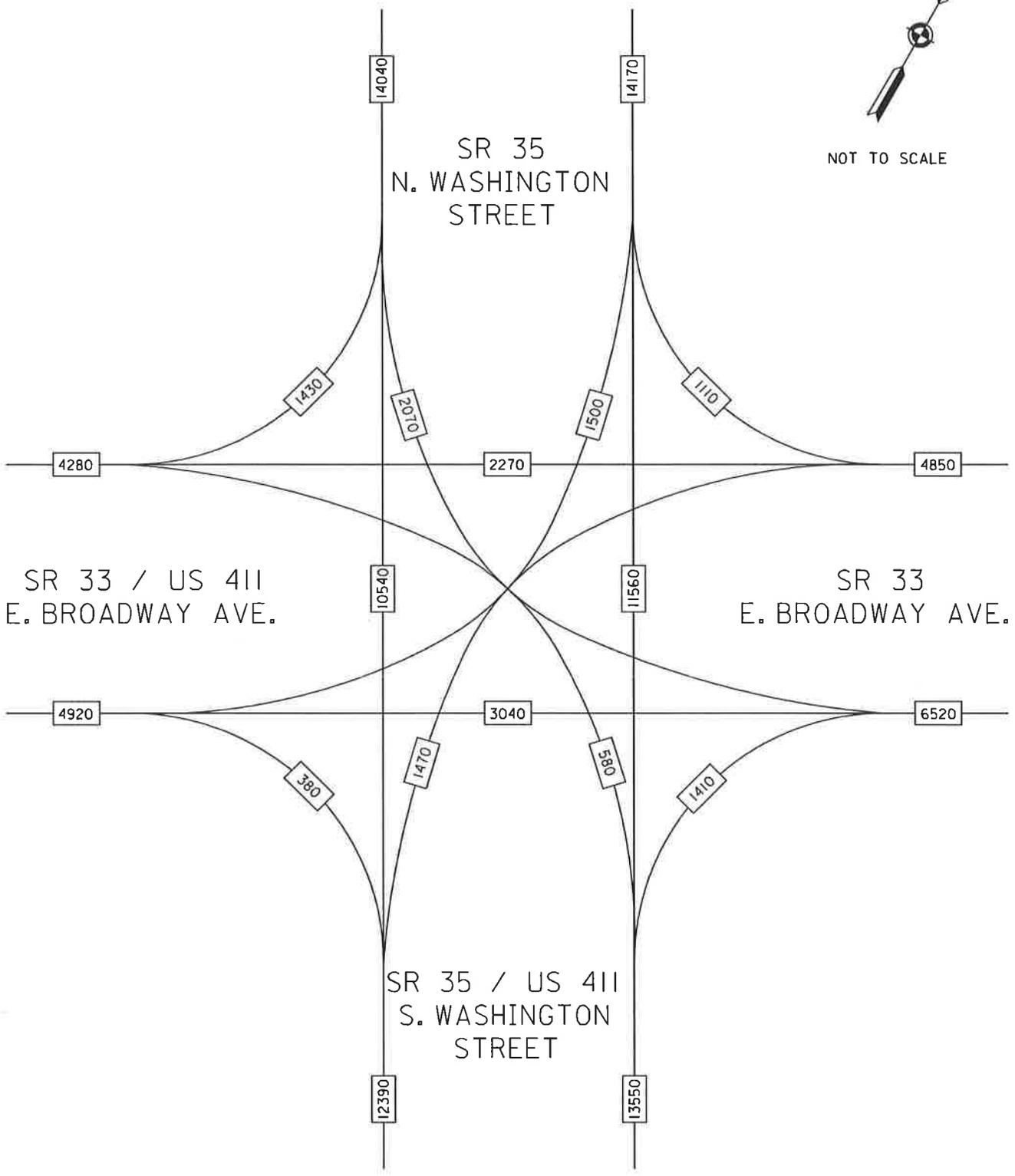


2020 AADT NO PPE

SR 33 @ HORN STREET/
WILDWOOD ROAD



NOT TO SCALE



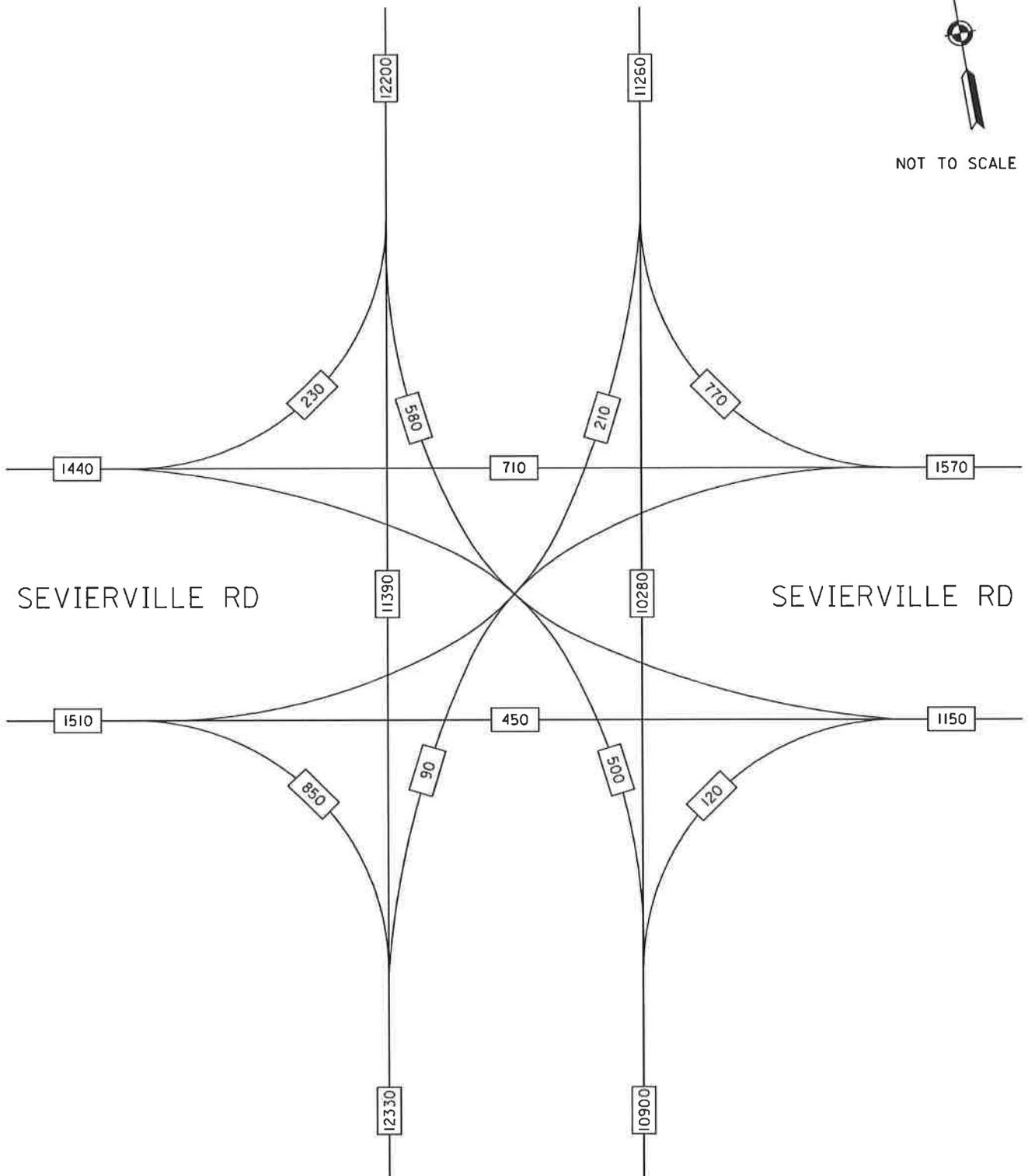
2020 AADT NO PPE

SR 33 @ SR 35

SR 35/N. WASHINGTON ST



NOT TO SCALE



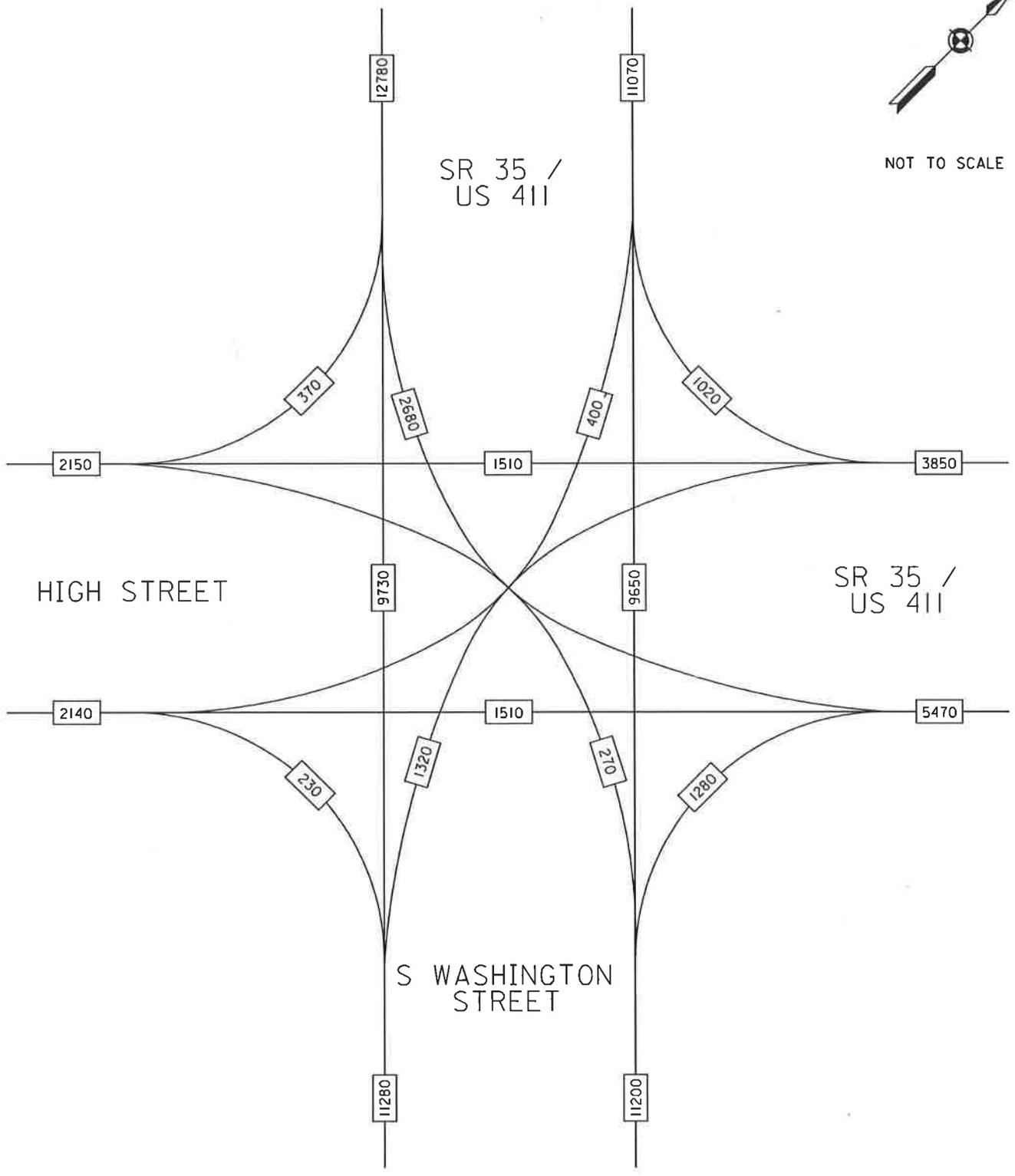
SR 35/US 411 S. WASHINGTON ST

2020 AADT NO PPE

SEVIERVILLE RD @
SR 35/US 411 WASHINGTON ST



NOT TO SCALE

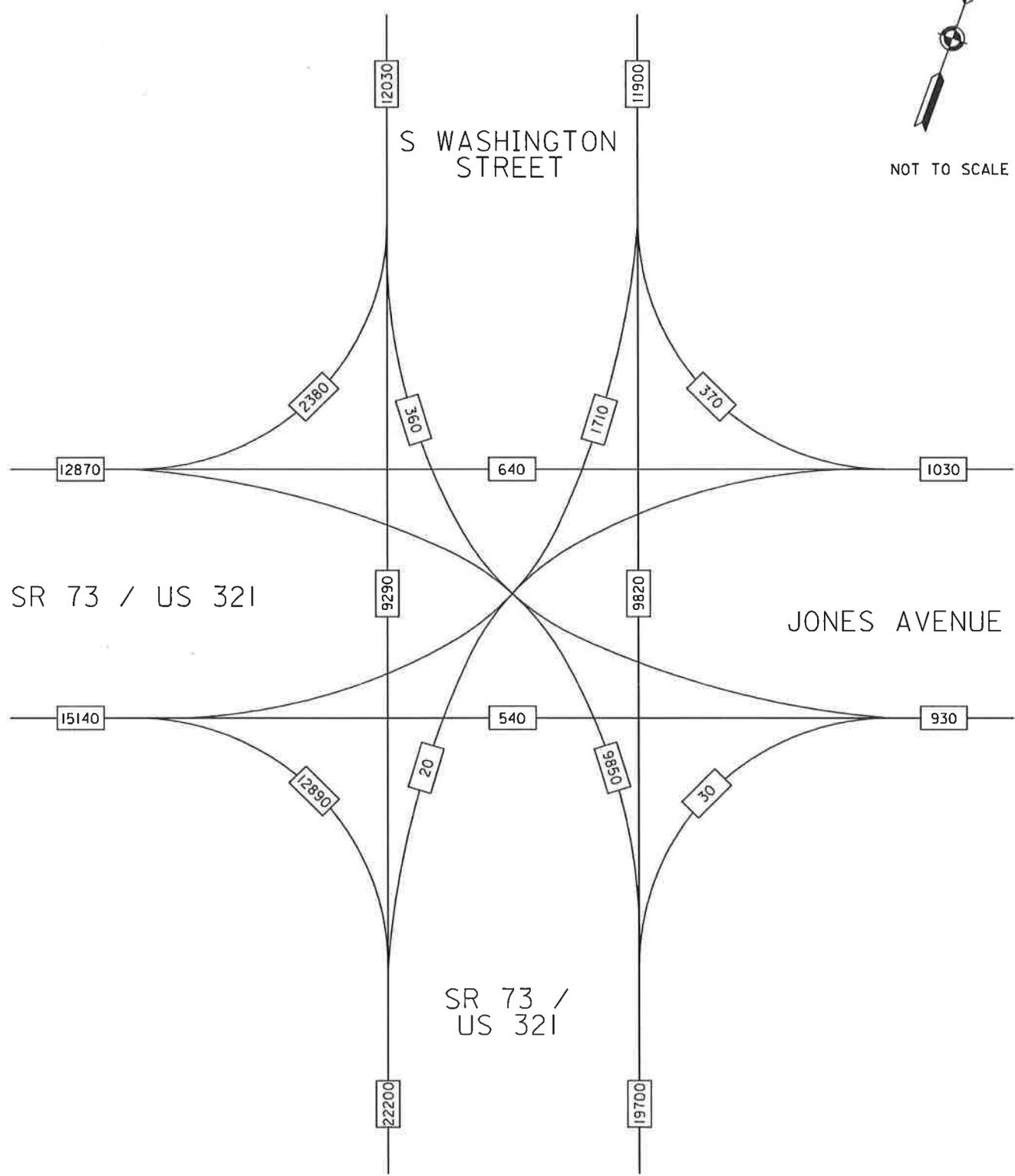


2020 AADT NO PPE

S WASHINGTON ST / SR 35
@ HIGH ST / SR 35



NOT TO SCALE

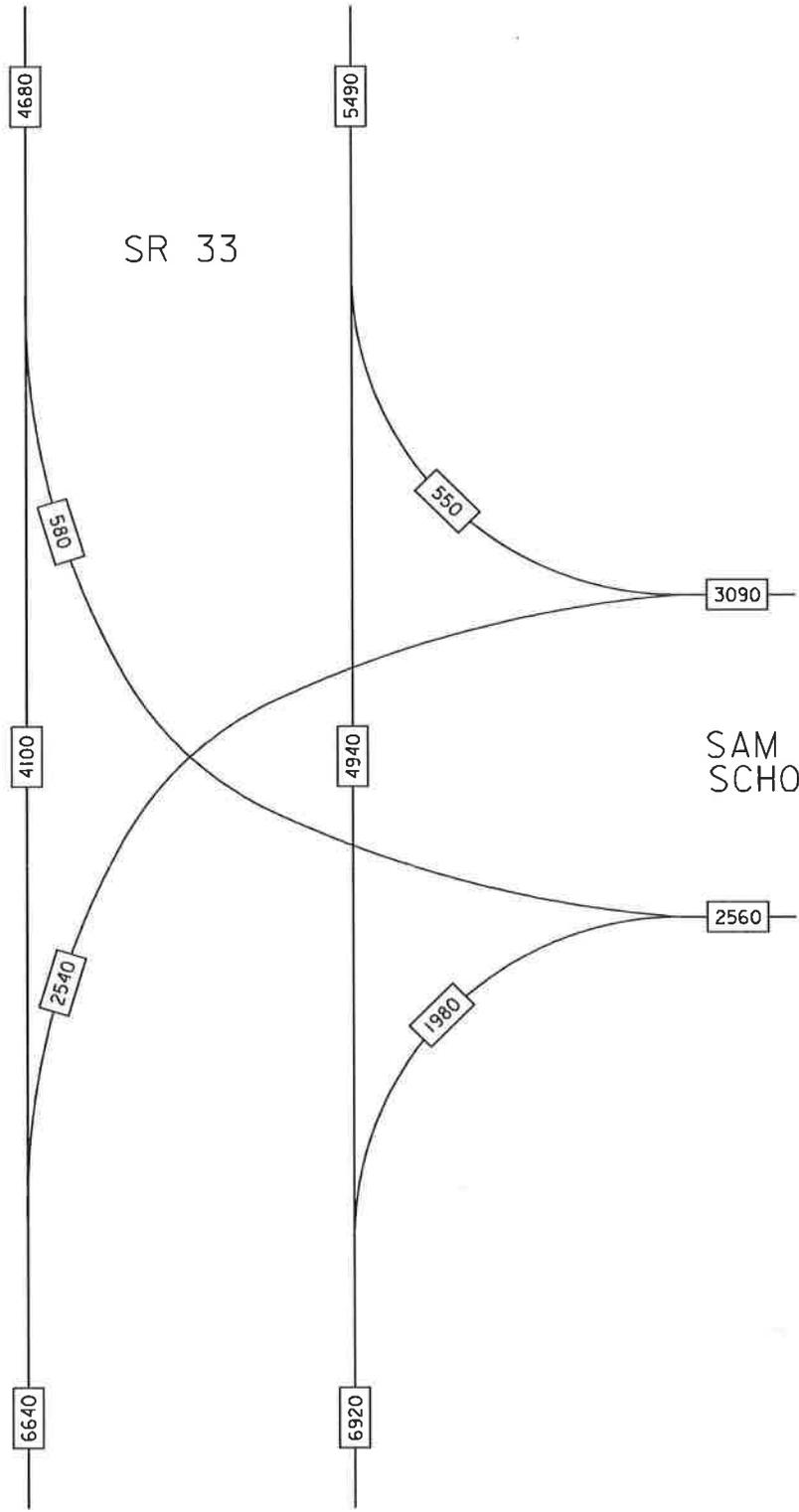


2020 AADT NO PPE

S WASHINGTON ST
@ SR 73 / US 321



NOT TO SCALE

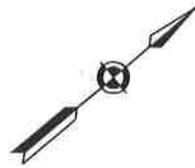


SR 33

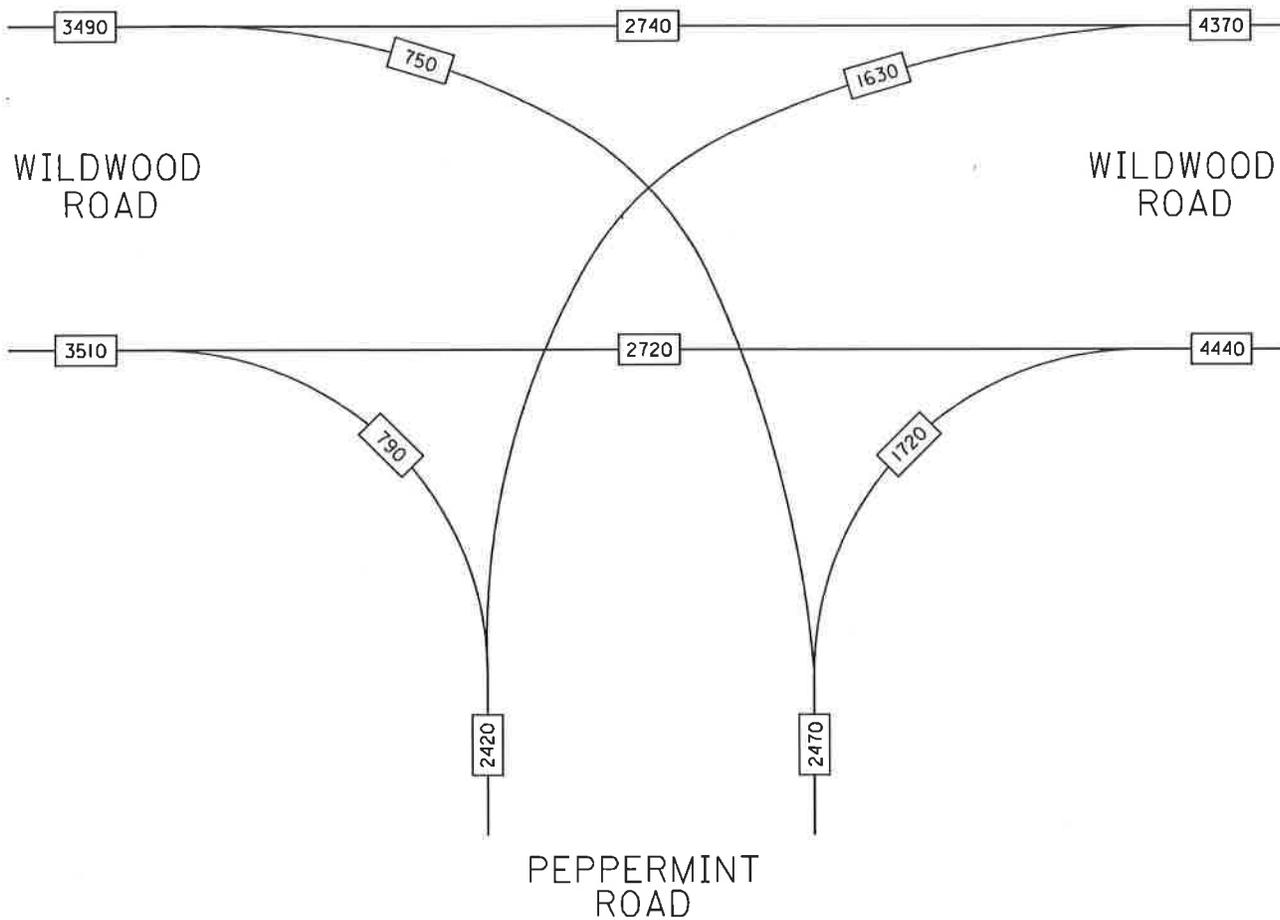
SAM HOUSTON SCHOOL ROAD

2020 AADT NO PPE

SR 33 @
SAM HOUSTON SCHOOL ROAD



NOT TO SCALE



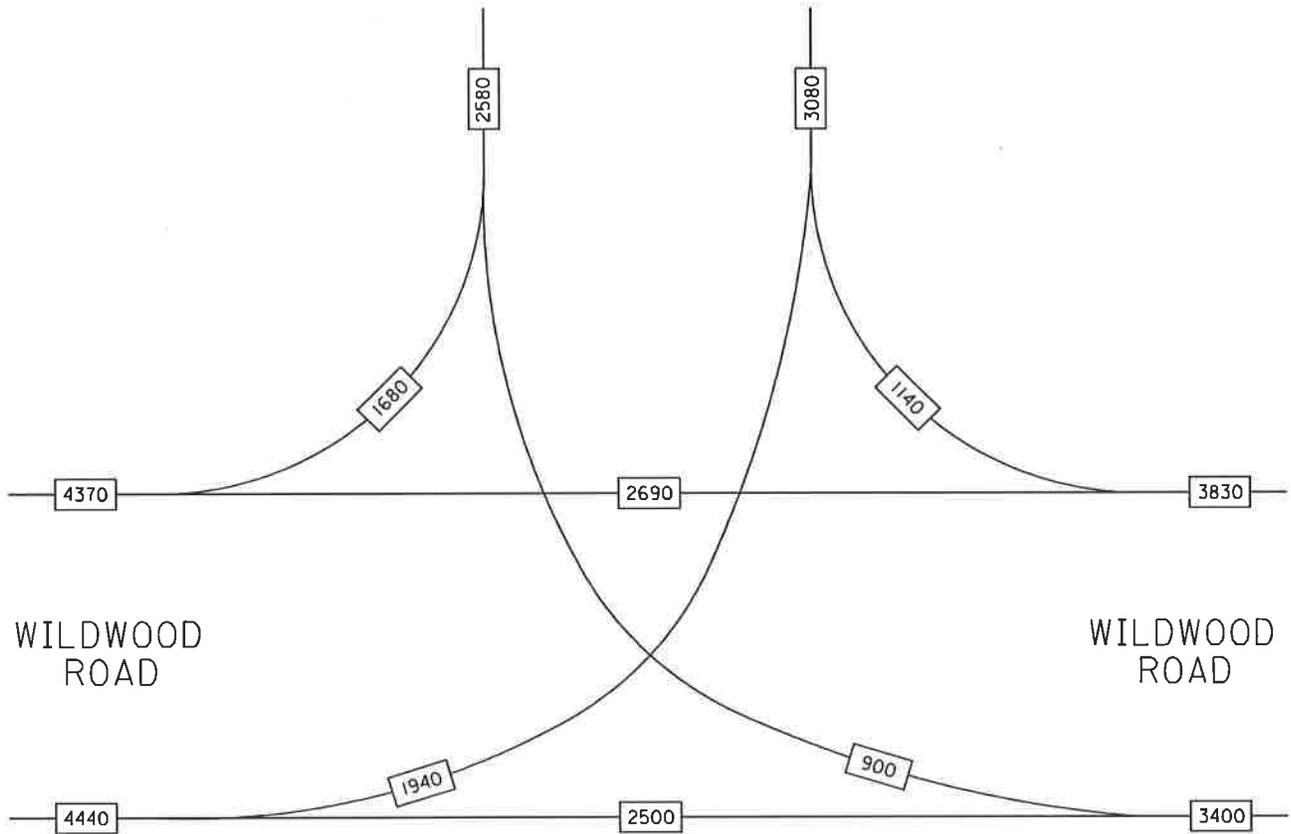
2020 AADT NO PPE

PEPPERMINT ROAD @
WILDWOOD ROAD



NOT TO SCALE

SAM HOUSTON SCHOOL ROAD



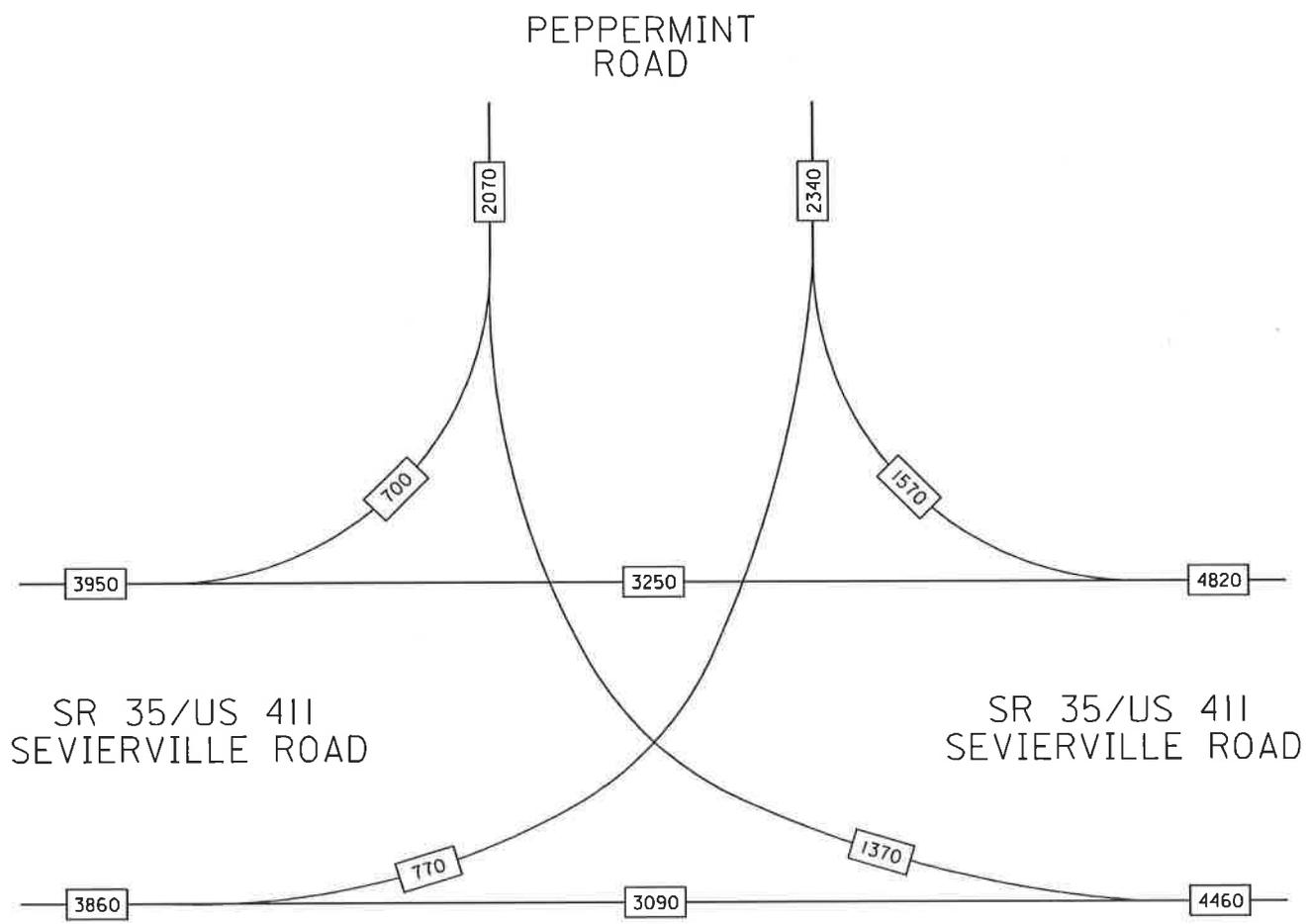
WILDWOOD ROAD

WILDWOOD ROAD

2020 AADT NO PPE	SAM HOUSTON SCHOOL ROAD @ WILDWOOD ROAD
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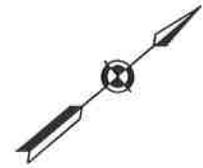
NOT TO SCALE



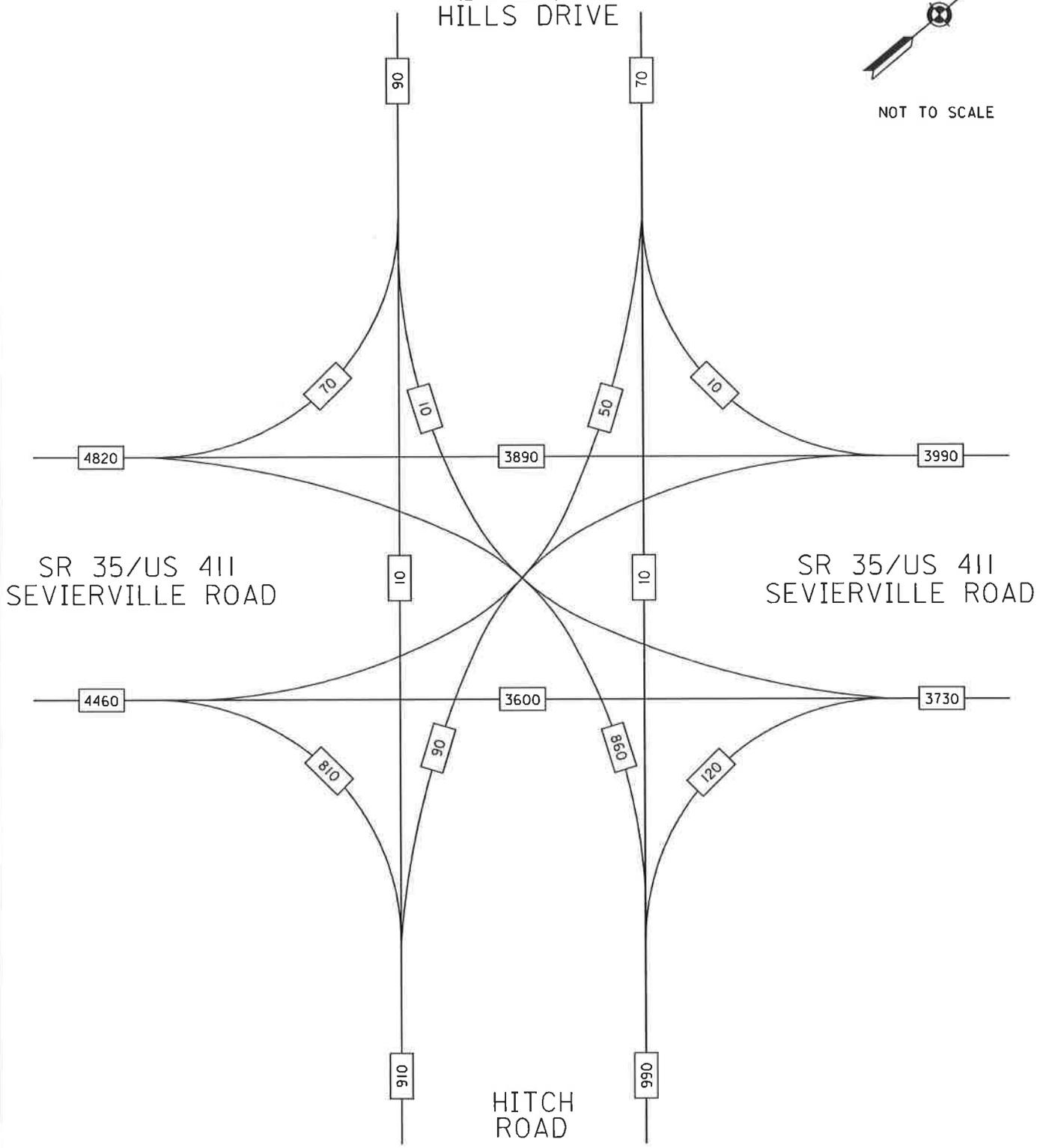
2020 AADT NO PPE

SR 35/US 411/SEVIERVILLE ROAD @
PEPPERMINT ROAD

PEPPERMINT HILLS DRIVE



NOT TO SCALE

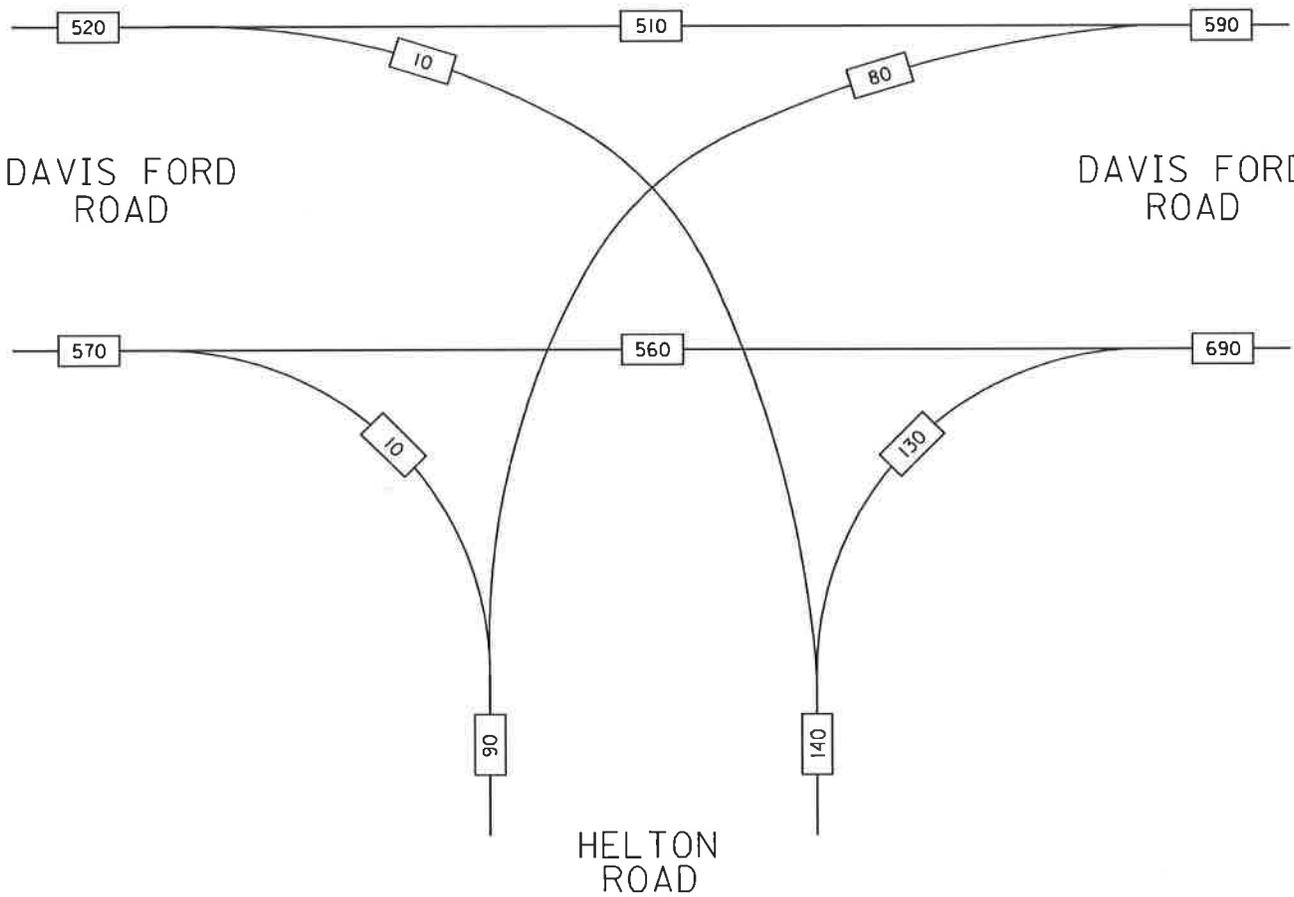


2020 AADT NO PPE

SR 35/US 411/SEVIERVILLE ROAD @
HITCH ROAD/PEPPERMINT HILLS DR



NOT TO SCALE

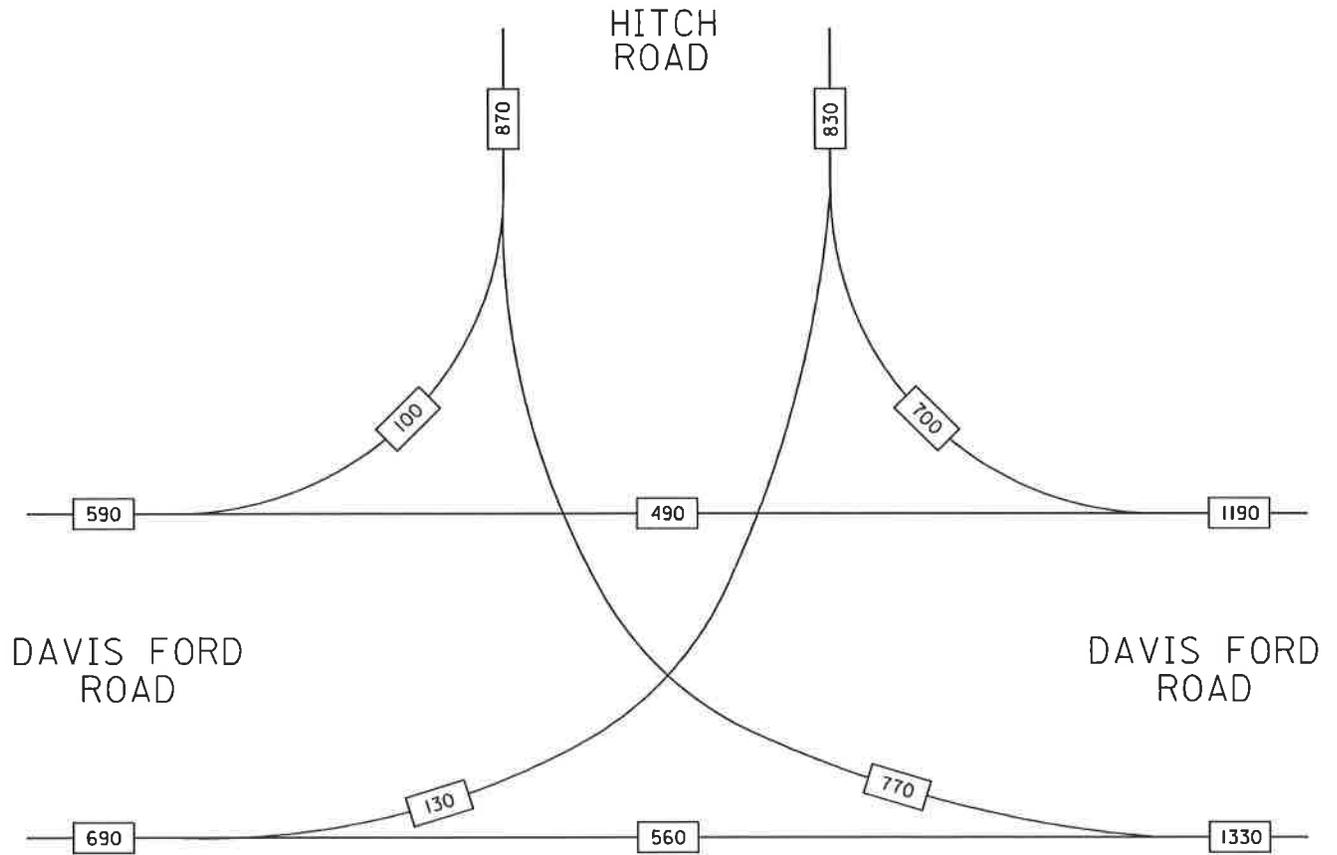


2020 AADT NO PPE

DAVIS FORD ROAD @
HELTON ROAD



NOT TO SCALE

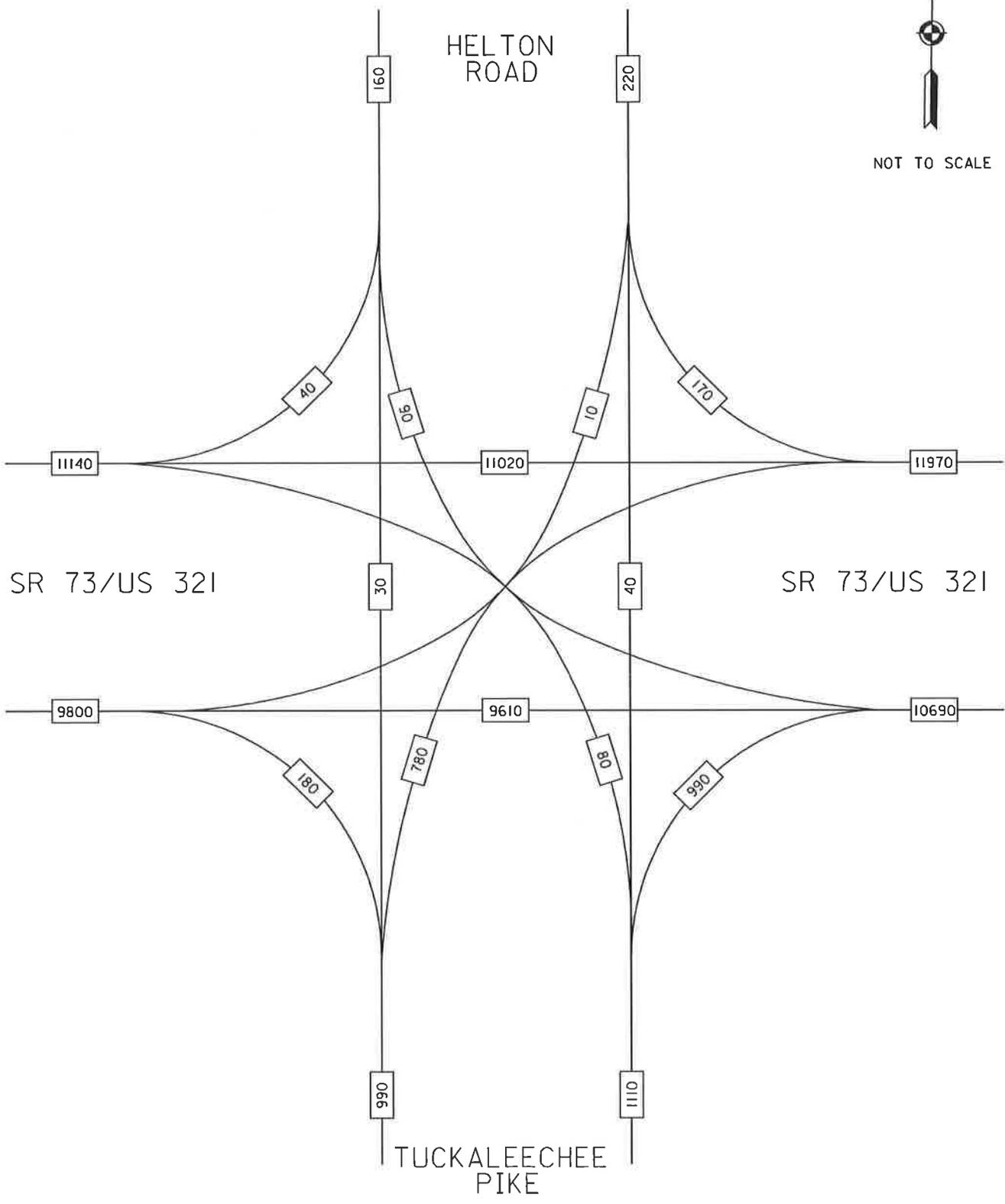


2020 AADT NO PPE

DAVIS FORD ROAD @
HITCH ROAD



NOT TO SCALE



2020 AADT NO PPE

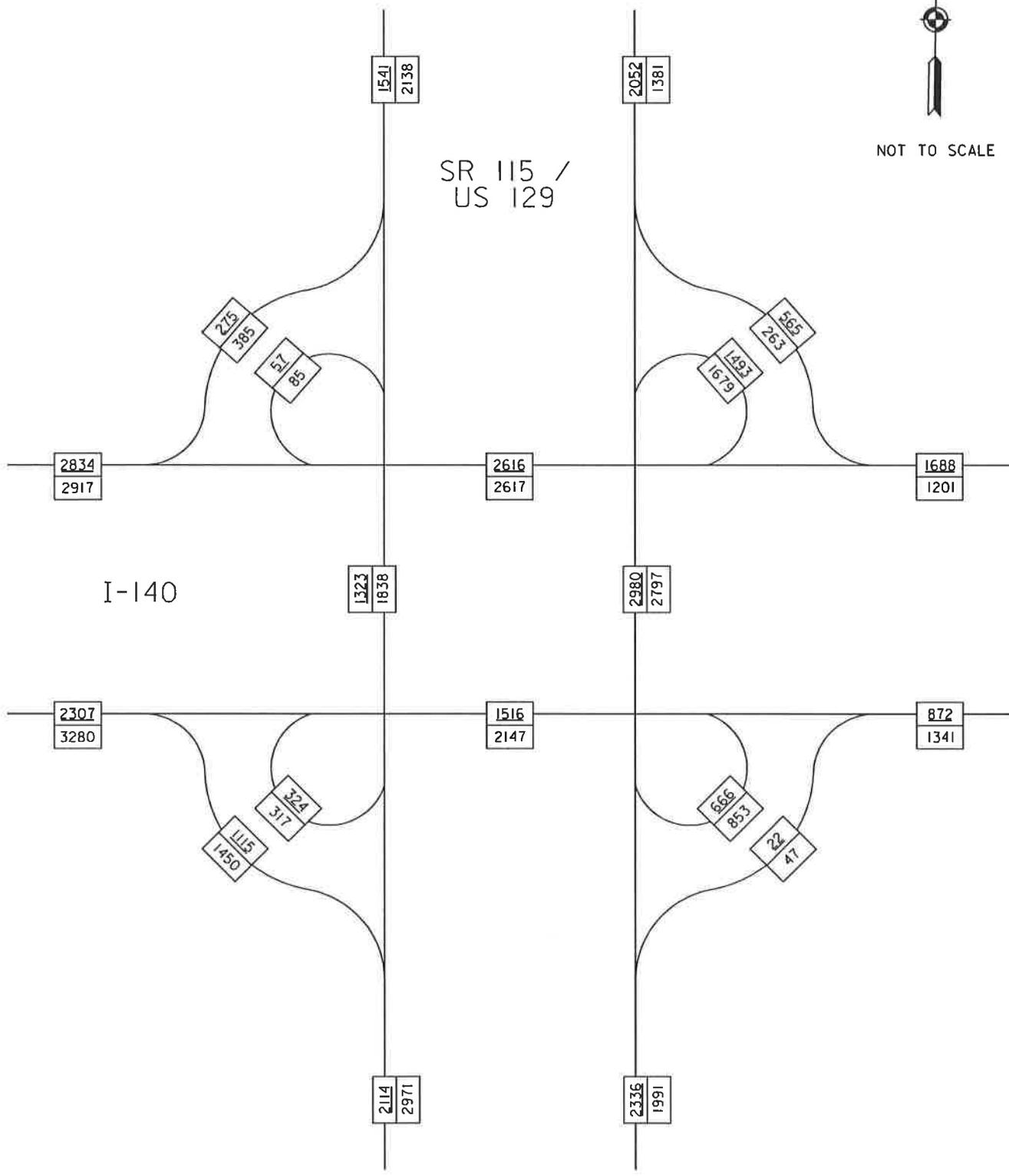
SR 73/US 321 @
HELTON ROAD/TUCKALEECHEE PIKE



NOT TO SCALE

SR 115 /
US 129

I-140

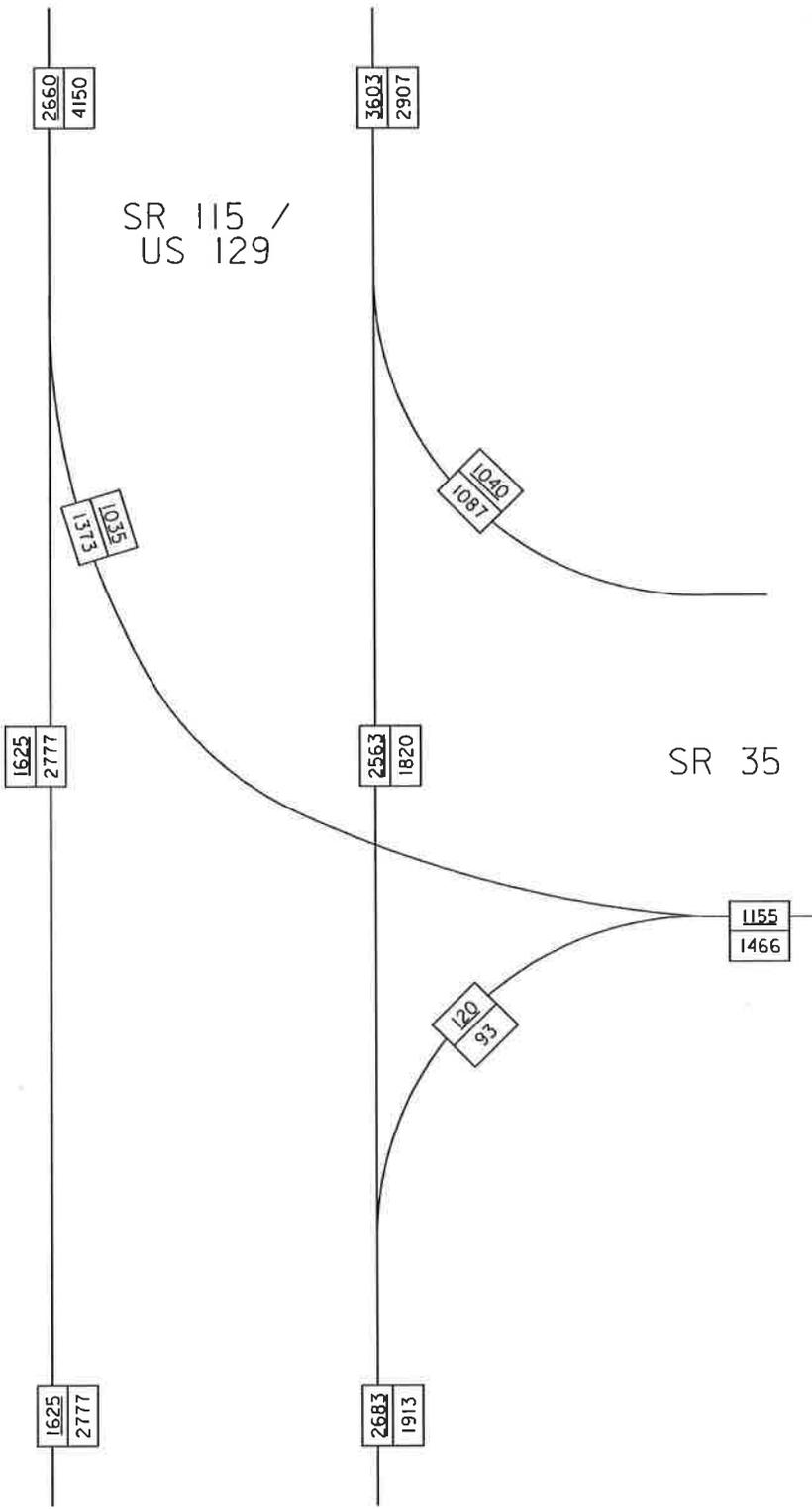


2020 DHV NO PPE
AM / PM

SR 115/US 129 @
I-140 / PELLISSIPPI PARKWAY



NOT TO SCALE

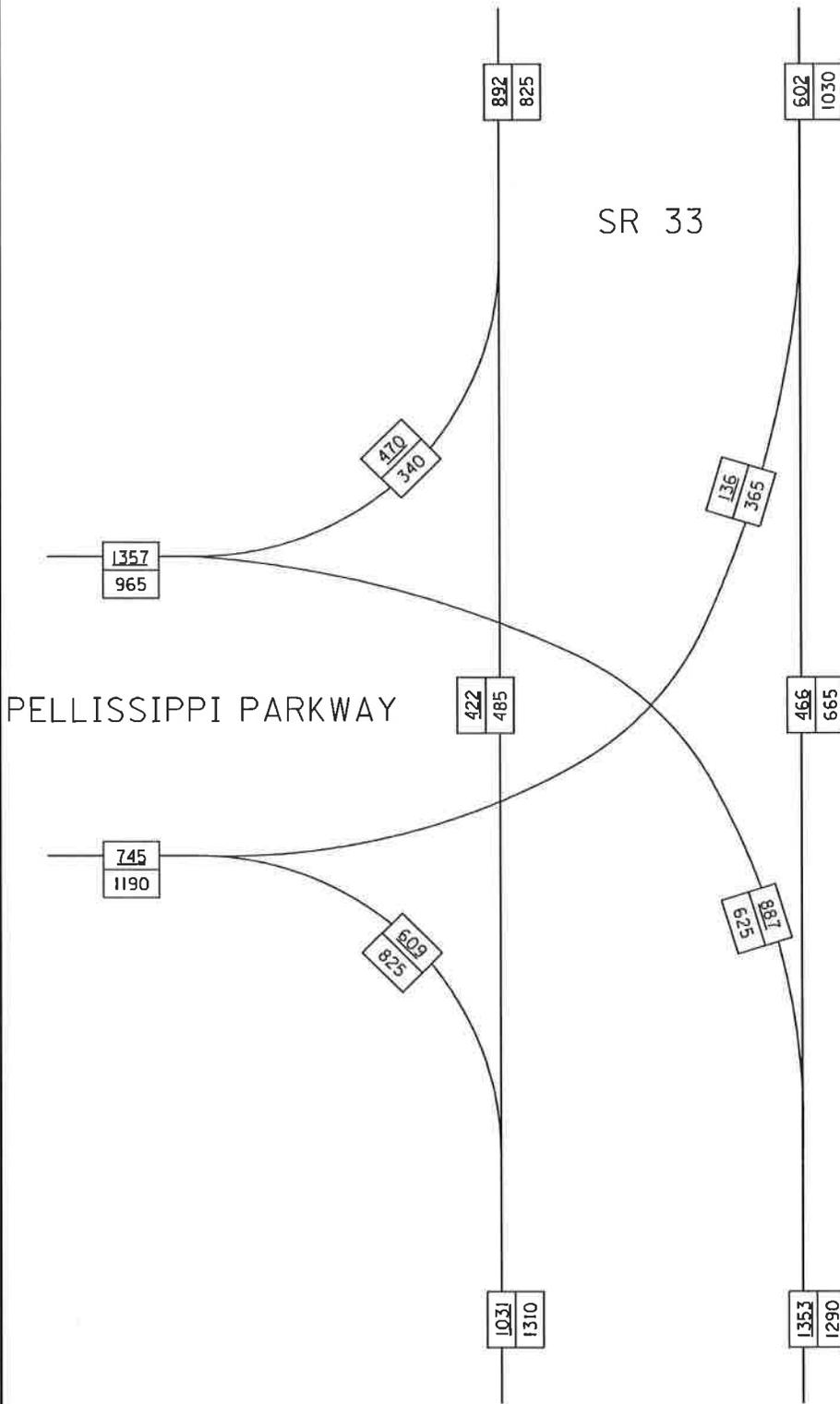


2020 DHV NO PPE
AM / PM

SR 115/US 129 @ SR 35



NOT TO SCALE

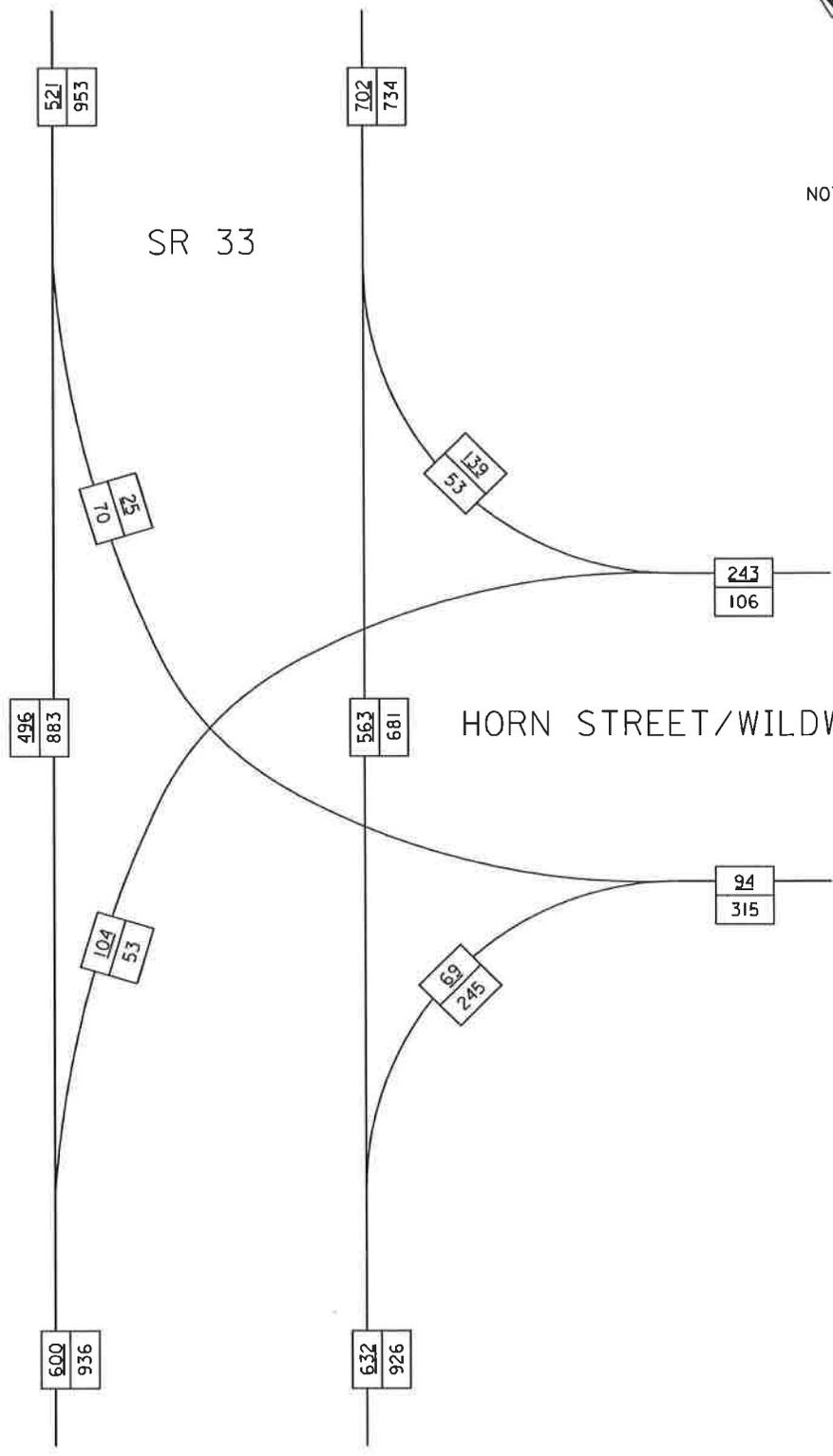


2020 DHV NO PPE
AM / PM

SR 33 @ PELLISSIPPI PARKWAY



NOT TO SCALE

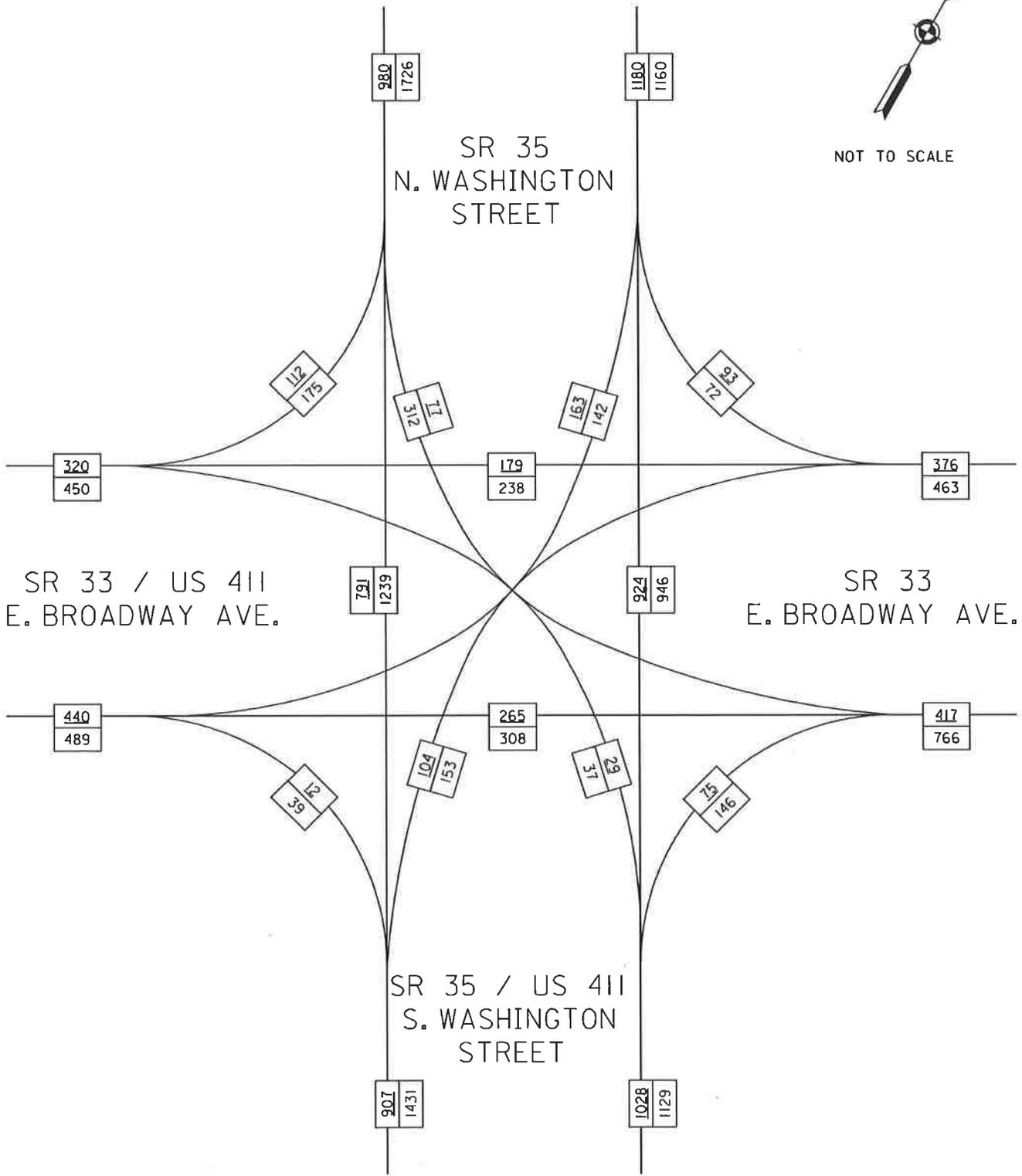


2020 DHV NO PPE
AM / PM

SR 33 @ HORN STREET/
WILDWOOD ROAD



NOT TO SCALE



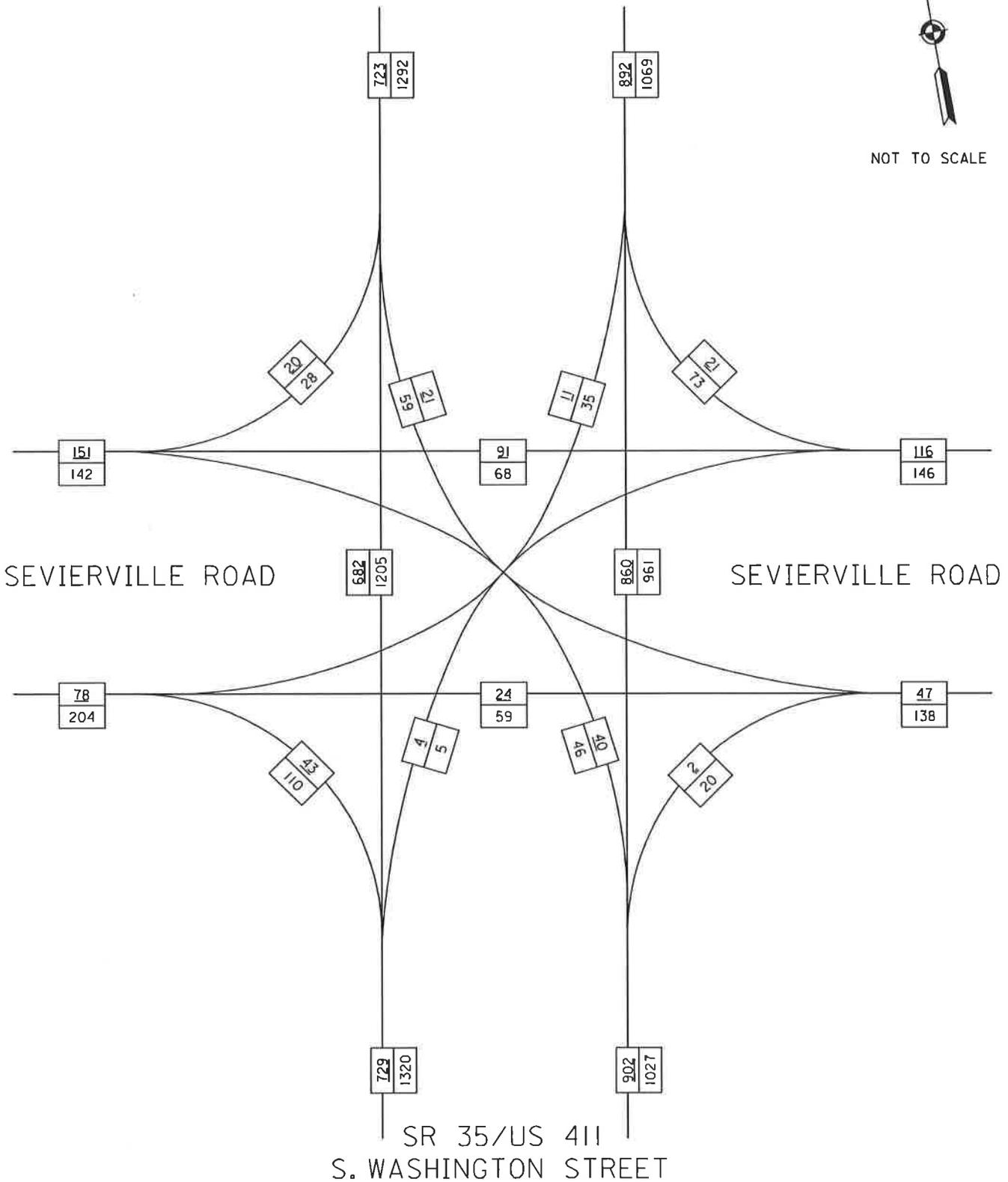
2020 DHV NO PPE
AM / PM

SR 33 @ SR 35

SR 35/
N. WASHINGTON STREET



NOT TO SCALE

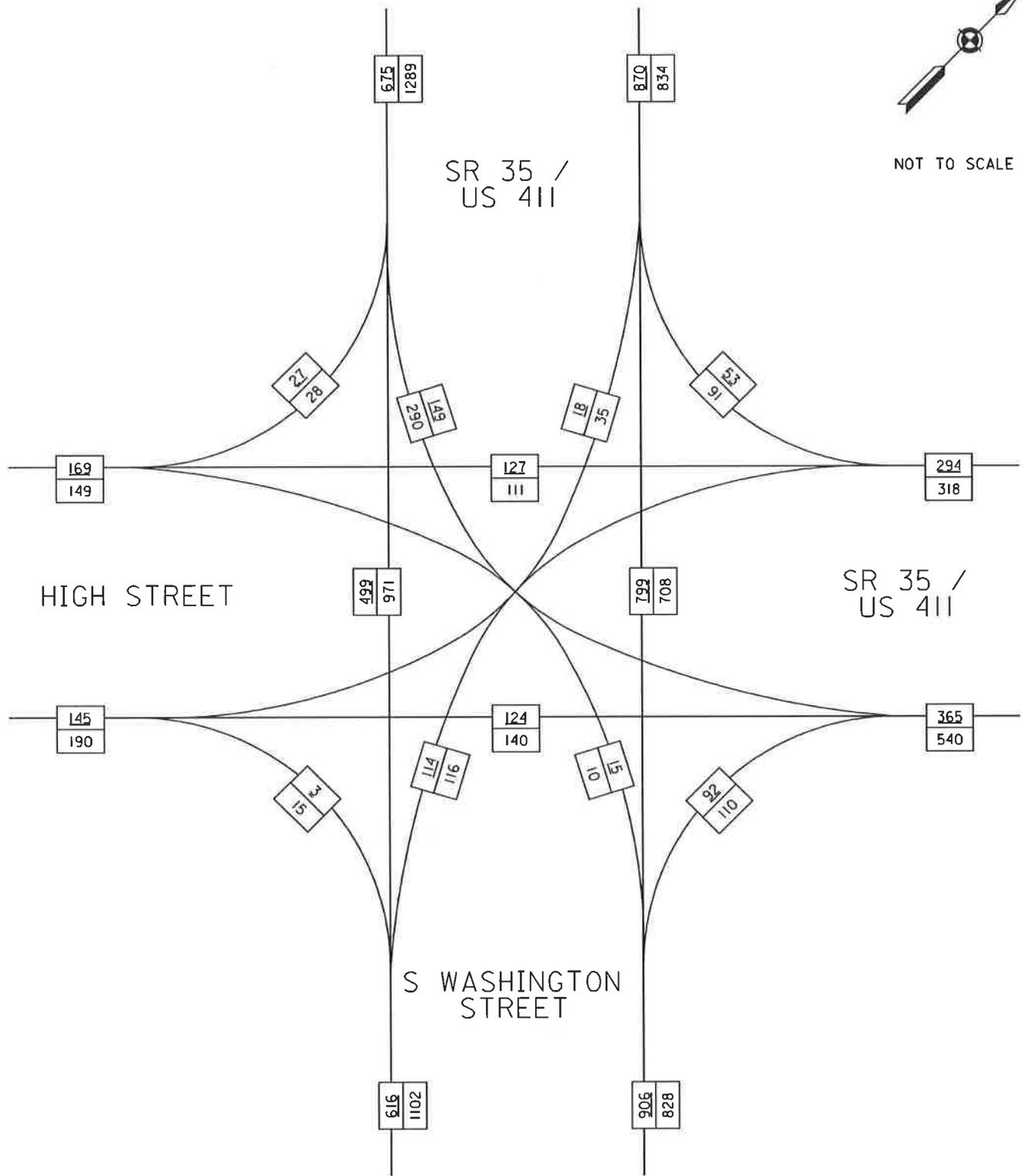


2020 DHV NO PPE
AM / PM

SEVIERVILLE ROAD @
SR 35/WASHINGTON STREET



NOT TO SCALE

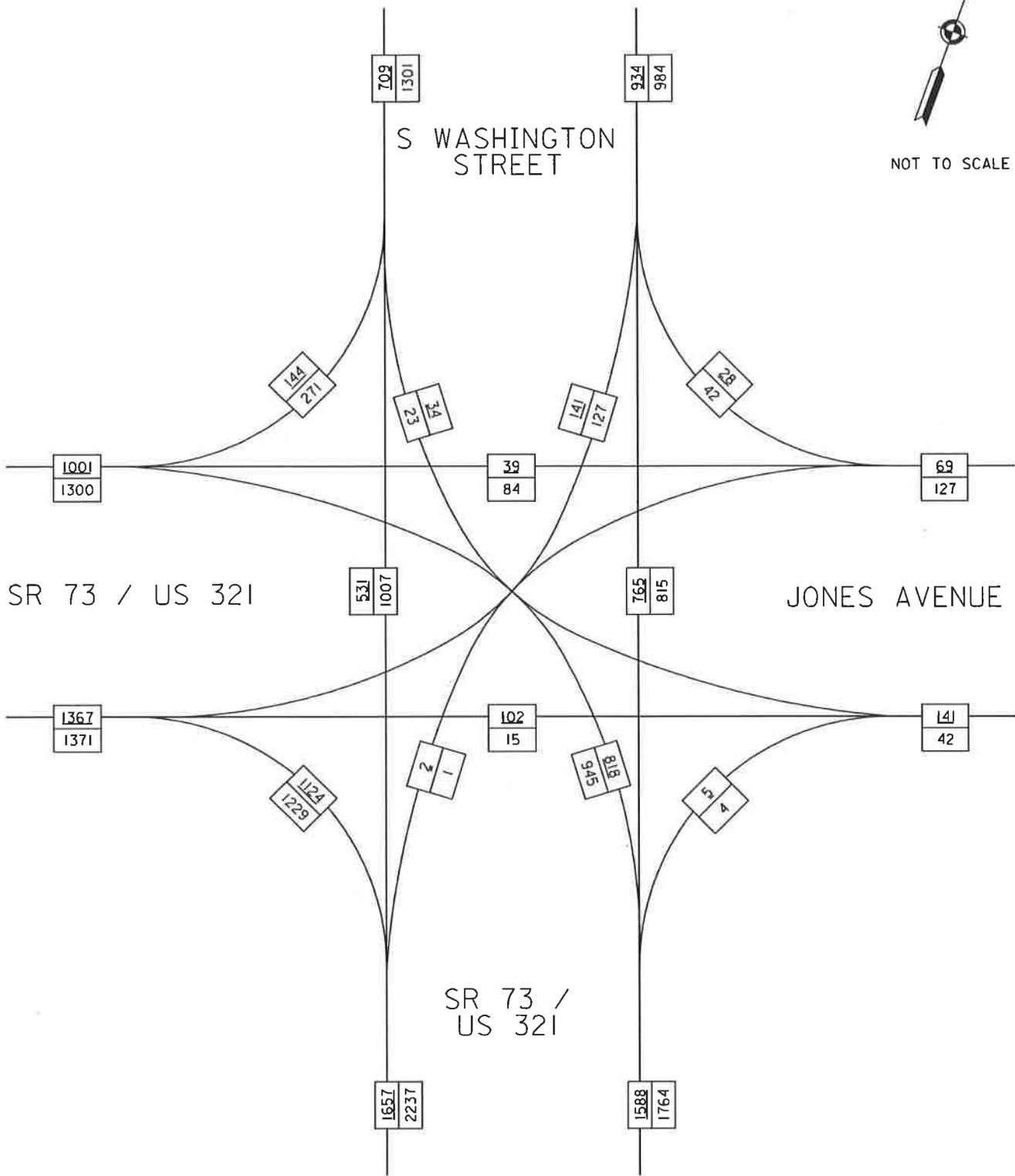


2020 DHV NO PPE
AM / PM

S WASHINGTON ST / SR 35
@ HIGH ST / SR 35



NOT TO SCALE

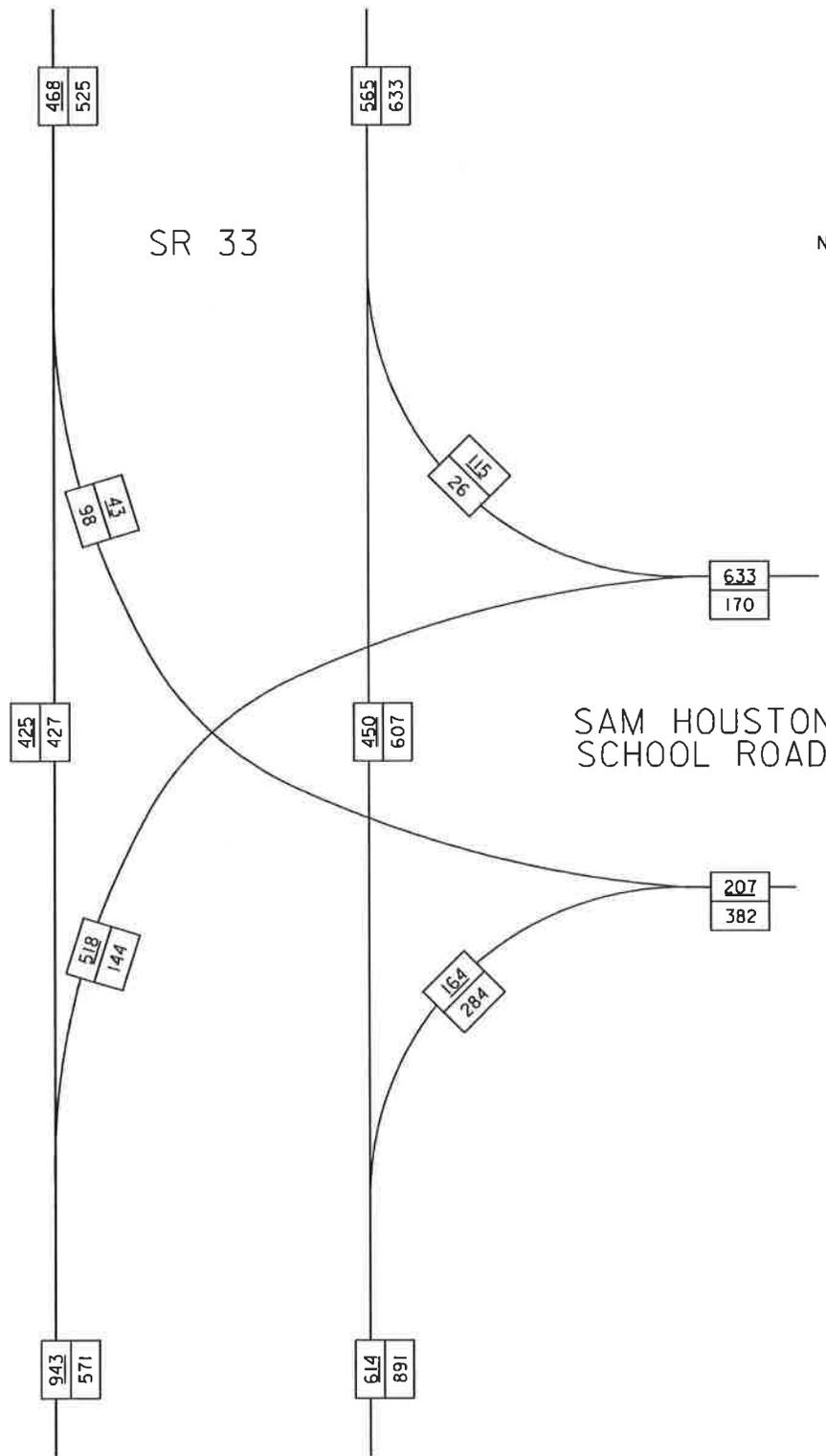


2020 DHV NO PPE
AM / PM

S WASHINGTON ST
@ SR 73/ US 321



NOT TO SCALE



SR 33

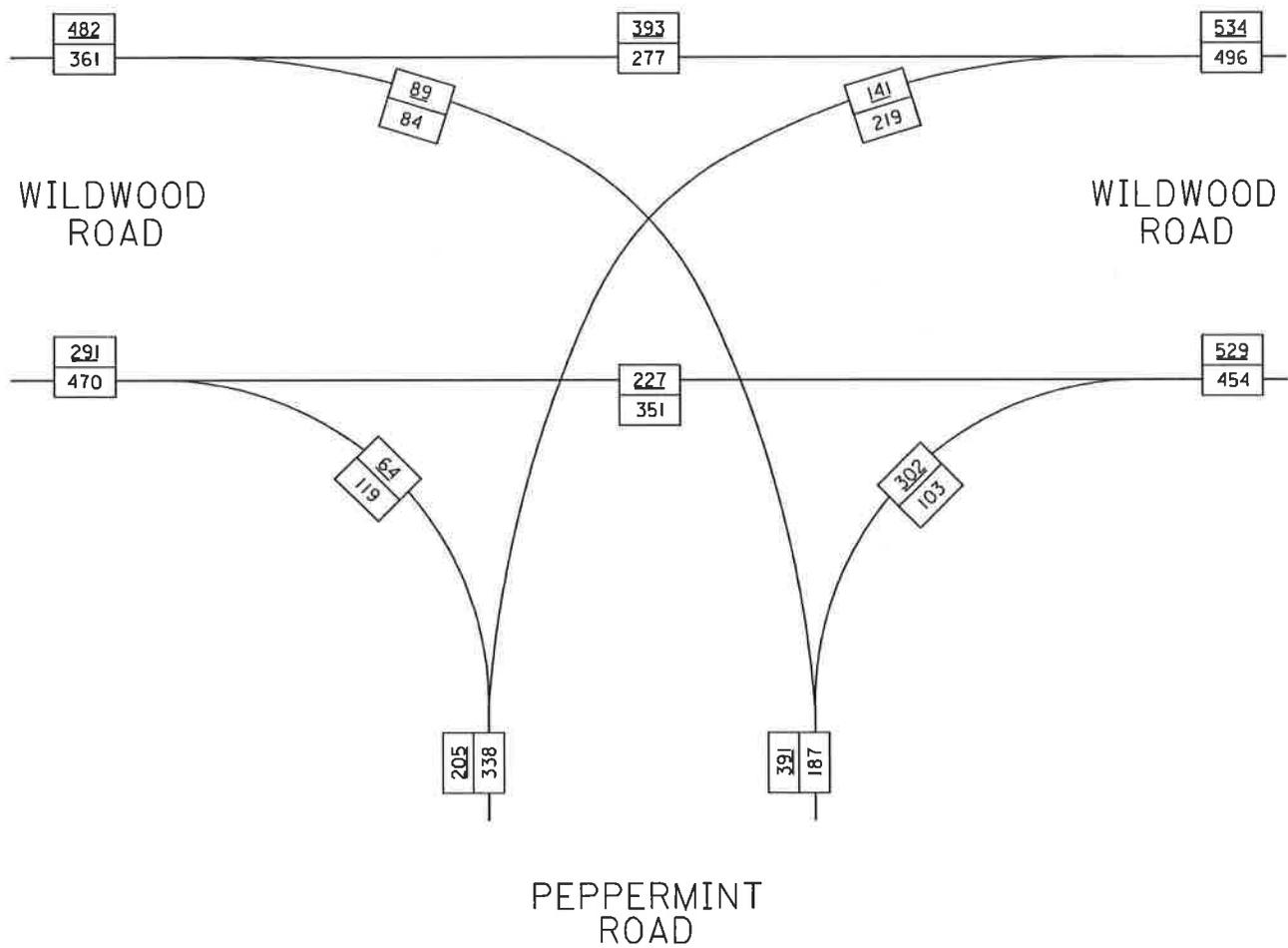
SAM HOUSTON SCHOOL ROAD

2020 DHV NO PPE
AM/PM

SR 33 @
SAM HOUSTON SCHOOL ROAD

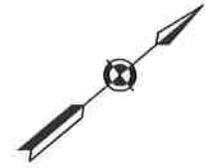


NOT TO SCALE



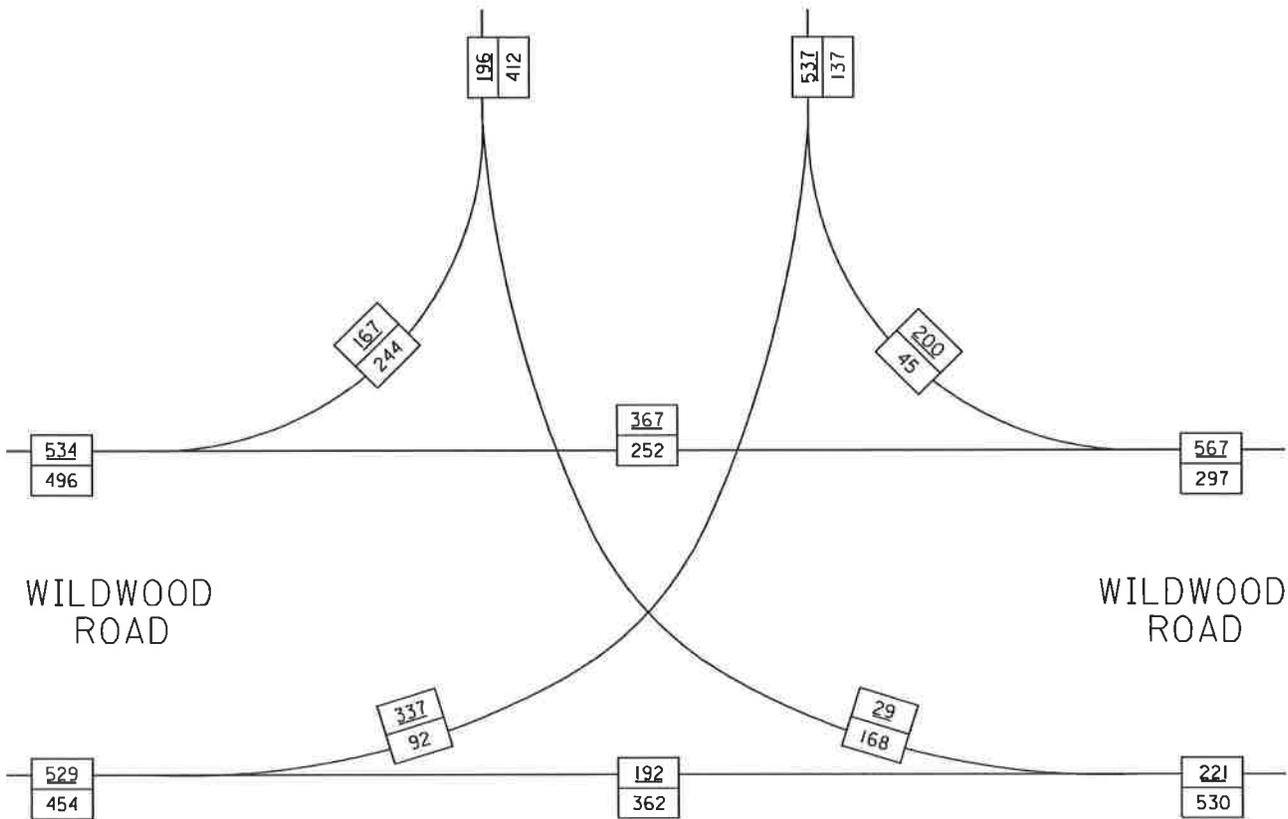
2020 DHV NO PPE
AM/PM

PEPPERMINT ROAD @
WILDWOOD ROAD



NOT TO SCALE

SAM HOUSTON SCHOOL ROAD

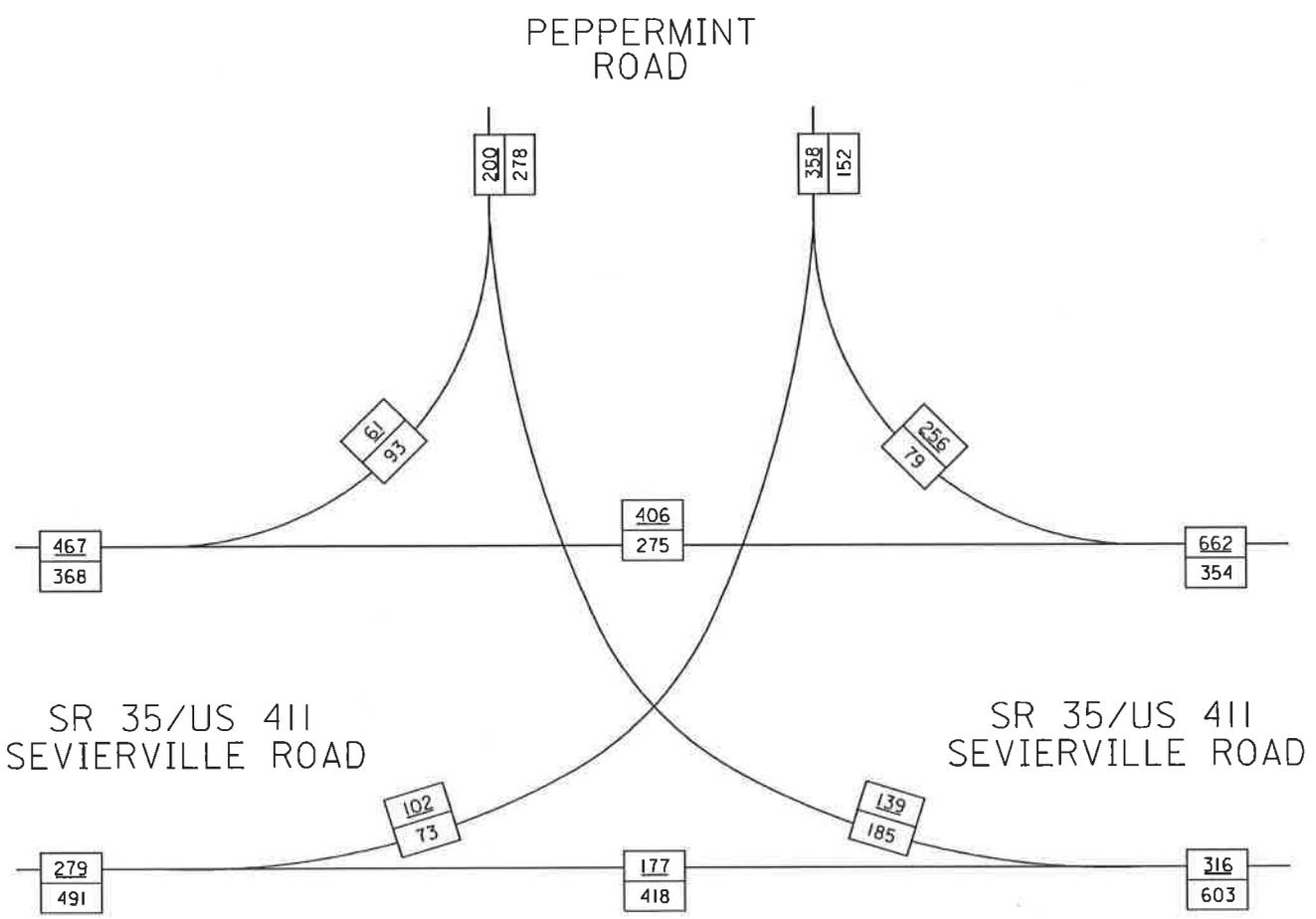


2020 DHV NO PPE
AM/PM

SAM HOUSTON SCHOOL ROAD @
WILDWOOD ROAD



NOT TO SCALE



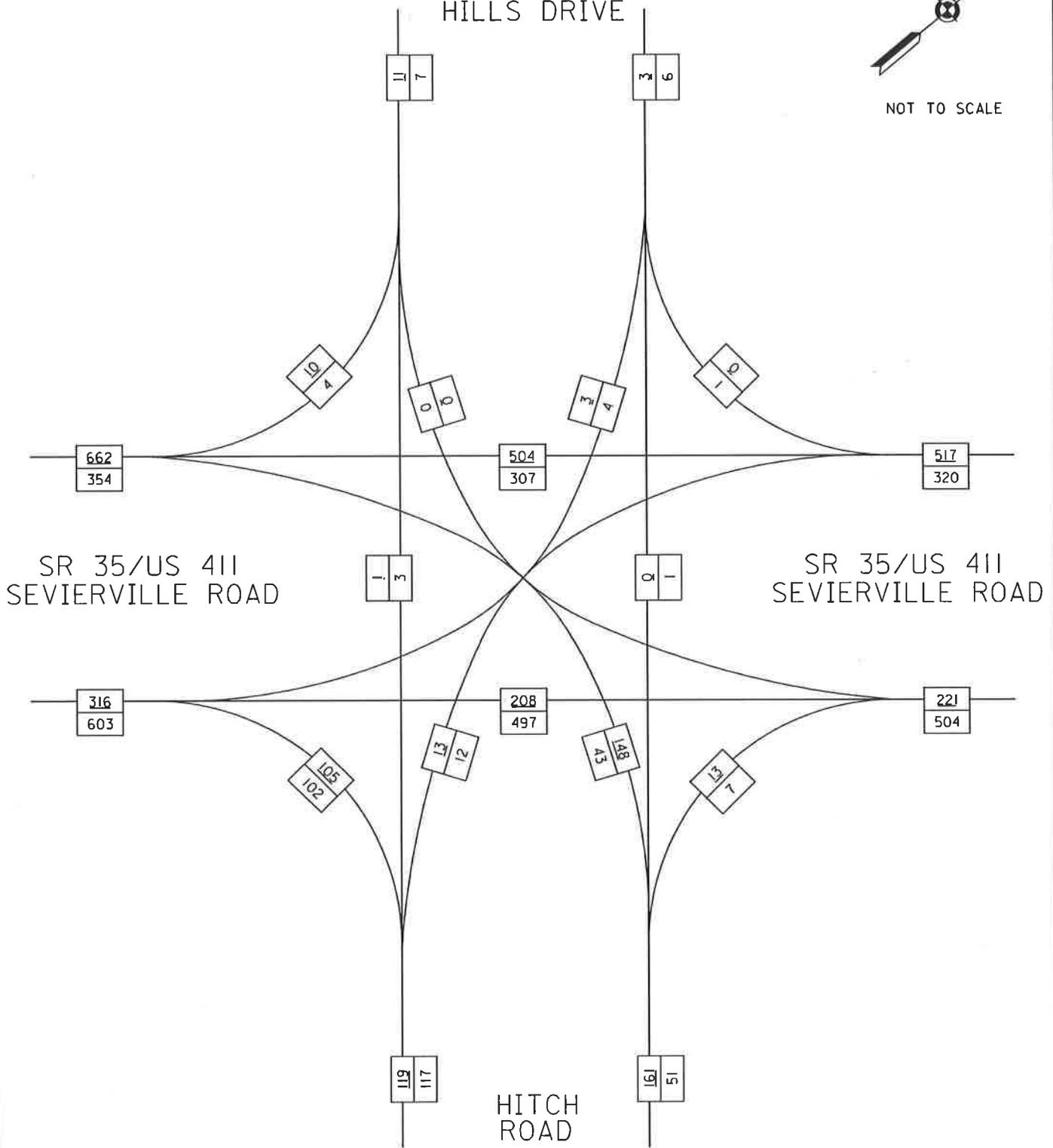
2020 DHV NO PPE
AM/PM

SR 35/US 411/SEVIERVILLE ROAD @
PEPPERMINT ROAD

PEPPERMINT HILLS DRIVE



NOT TO SCALE

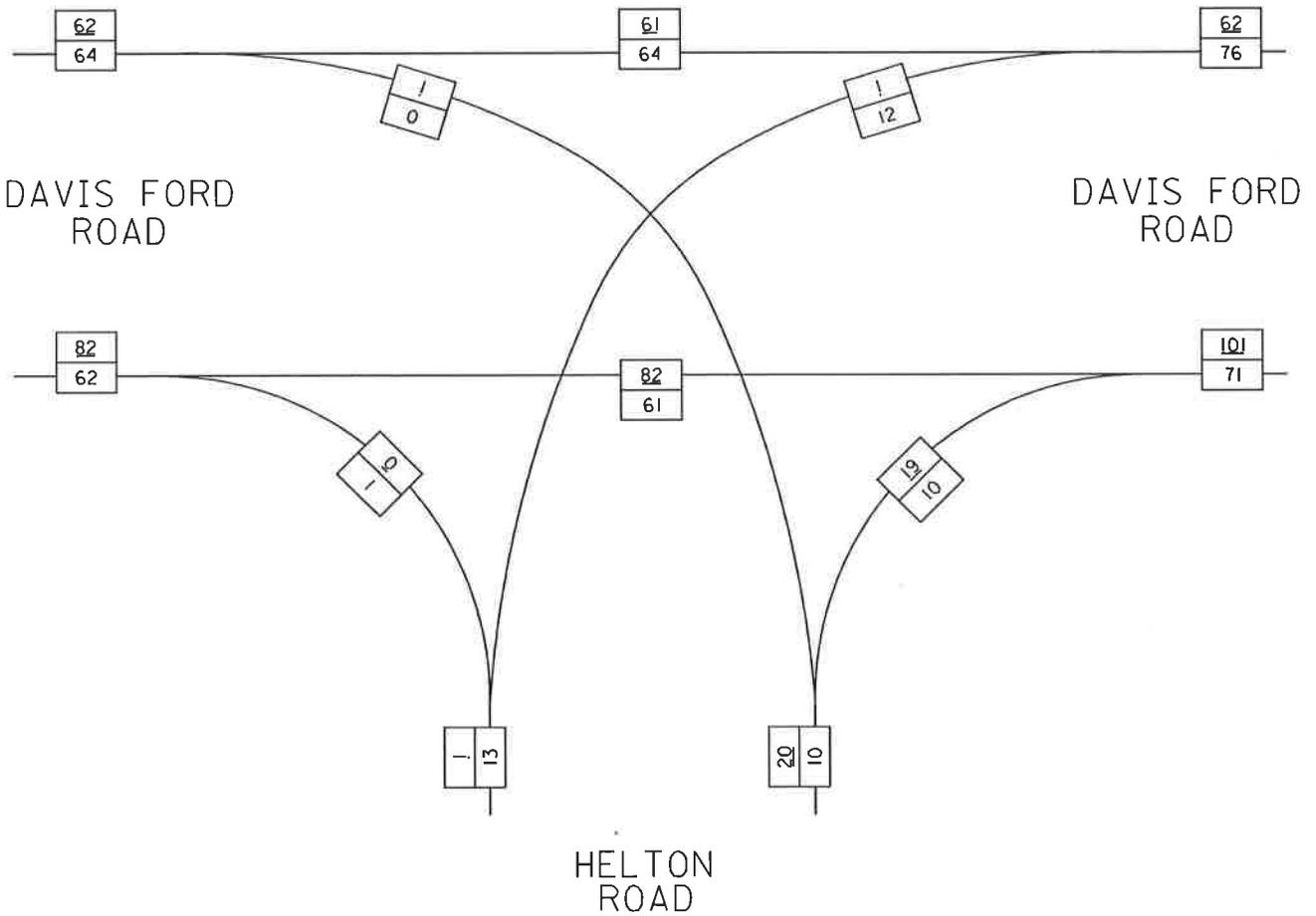


2020 DHV NO PPE
AM/PM

SR 35/US 411/SEVIERVILLE ROAD @
HITCH ROAD/PEPPERMINT HILLS DR



NOT TO SCALE

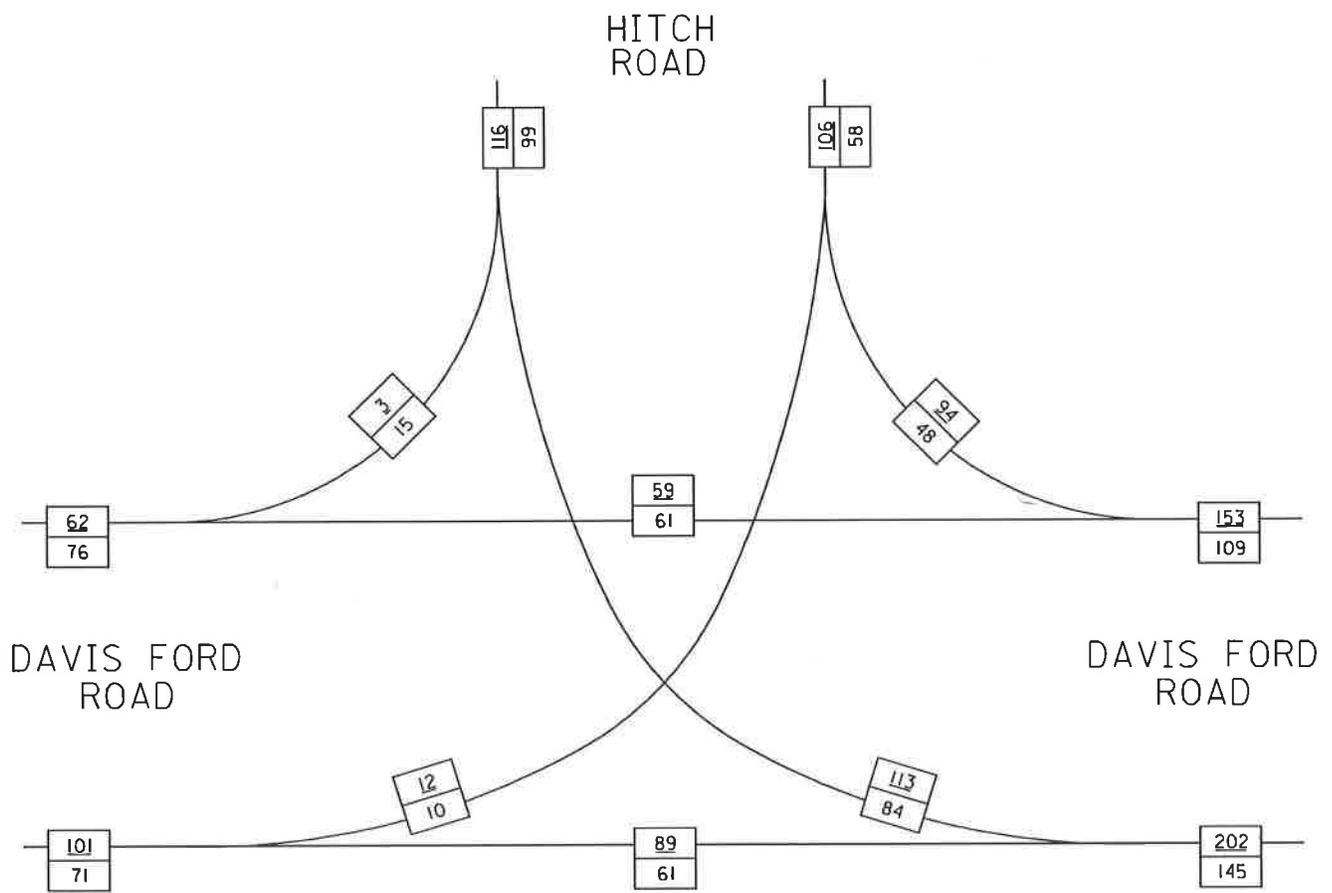


2020 DHV NO PPE
AM/PM

DAVIS FORD ROAD @
HELTON ROAD



NOT TO SCALE

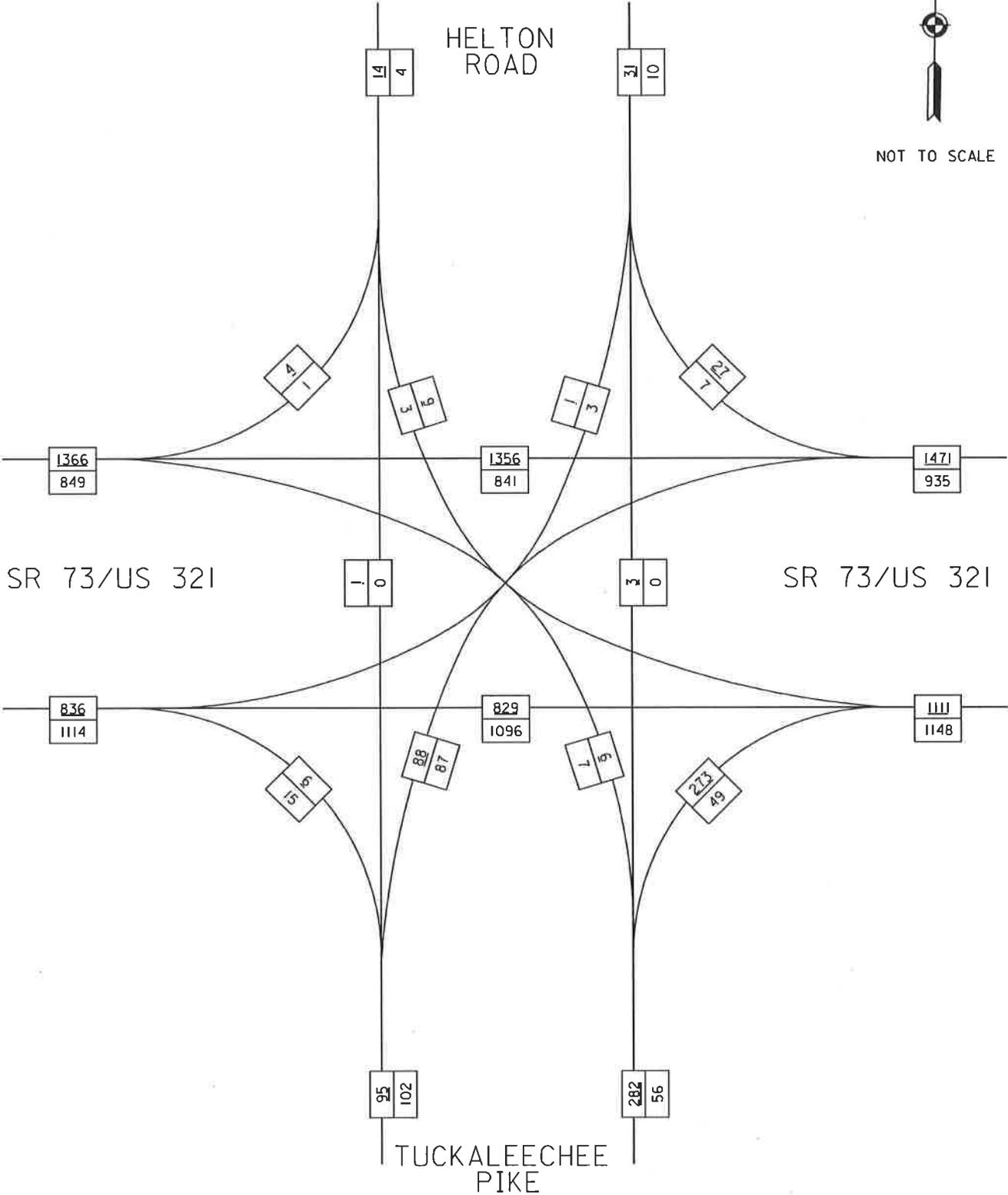


2020 DHV NO PPE
AM/PM

DAVIS FORD ROAD @
HITCH ROAD



NOT TO SCALE



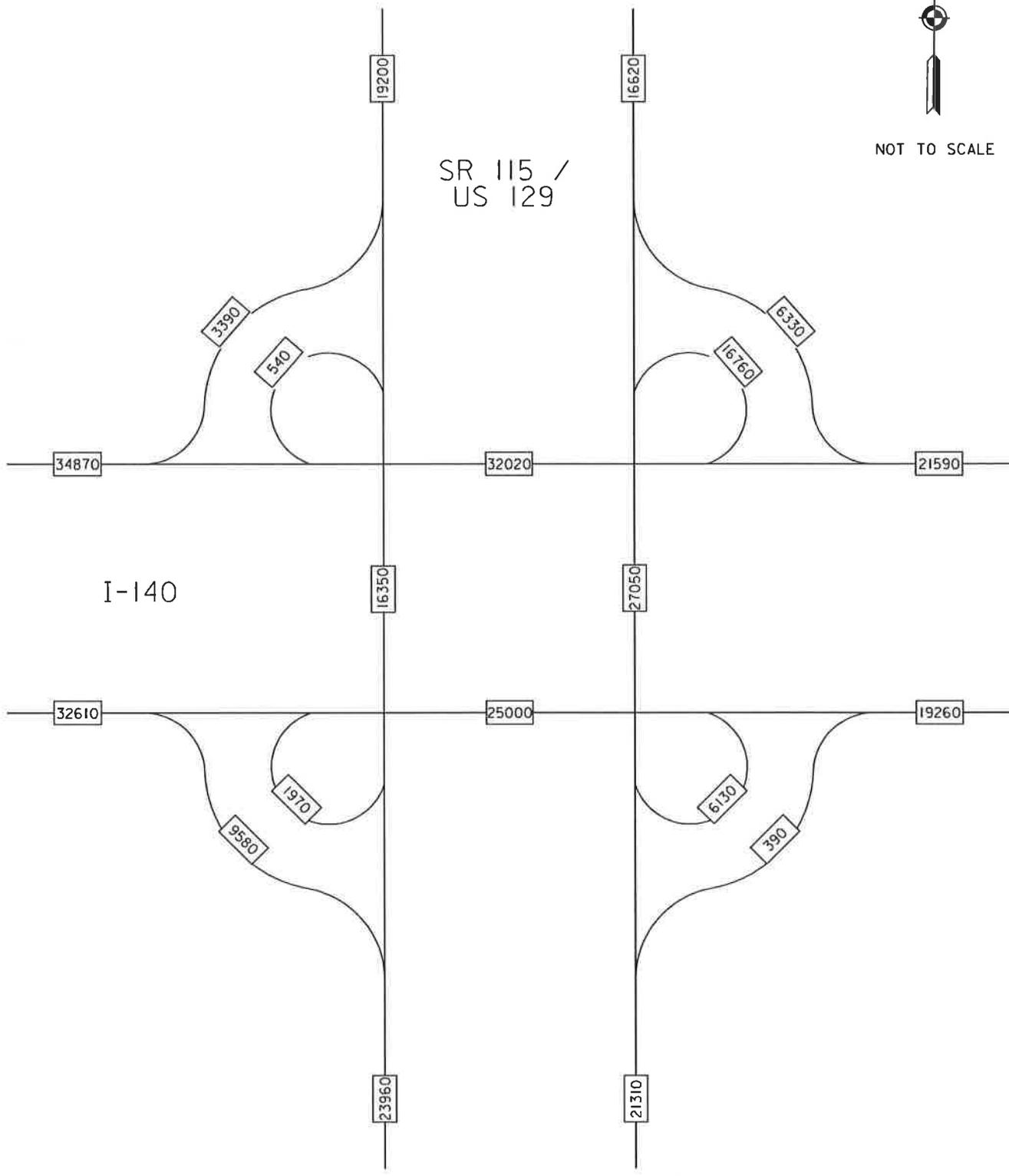
2020 DHV NO PPE
AM/PM

SR 73/US 321 @
HELTON ROAD/TUCKALEECHEE PIKE



NOT TO SCALE

SR 115 /
US 129

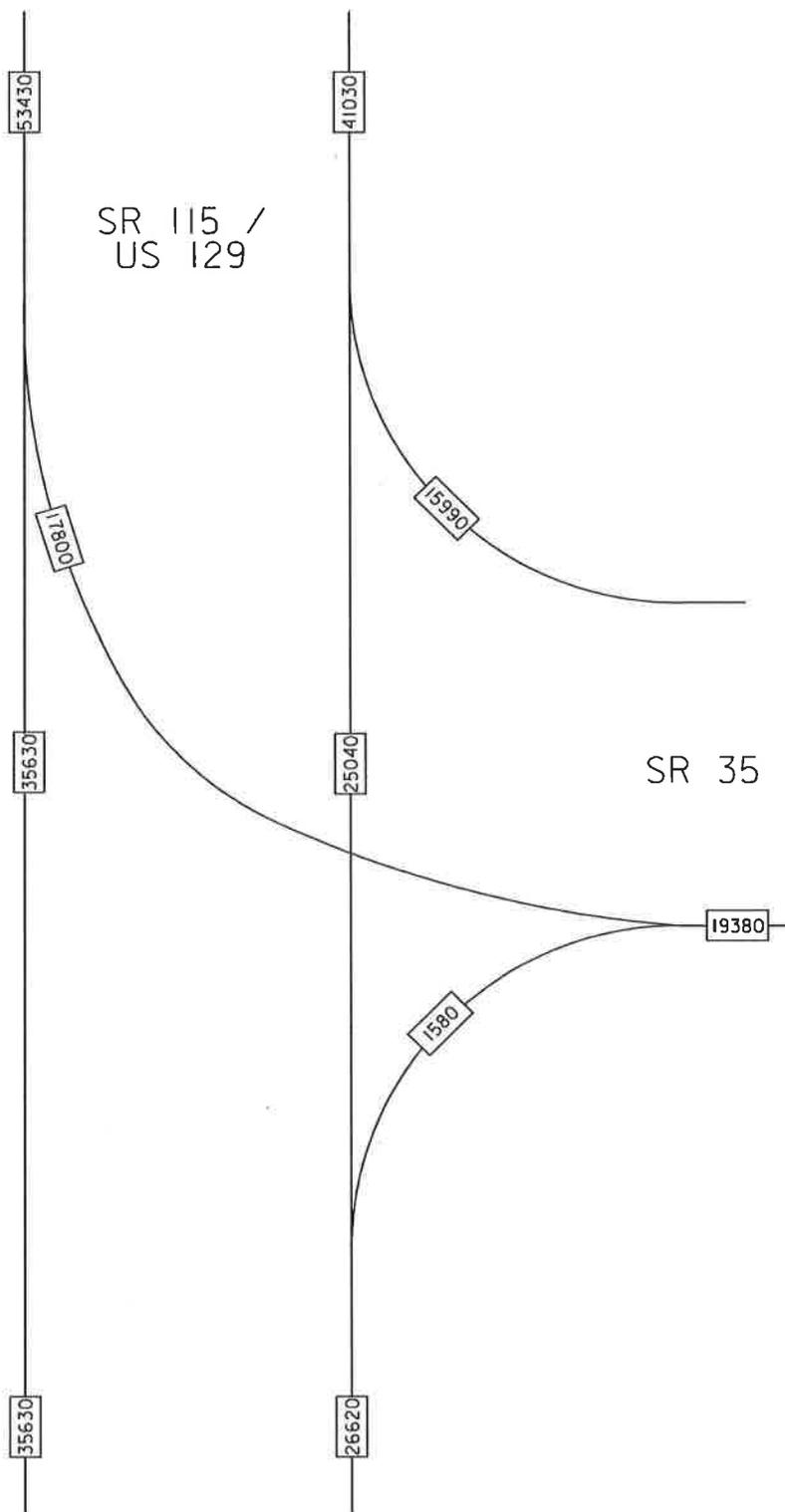


2040 AADT NO PPE

SR 115/US 129 @
I-140 / PELLISSIPPI PARKWAY



NOT TO SCALE



SR 115 /
US 129

SR 35

2040 AADT NO PPE

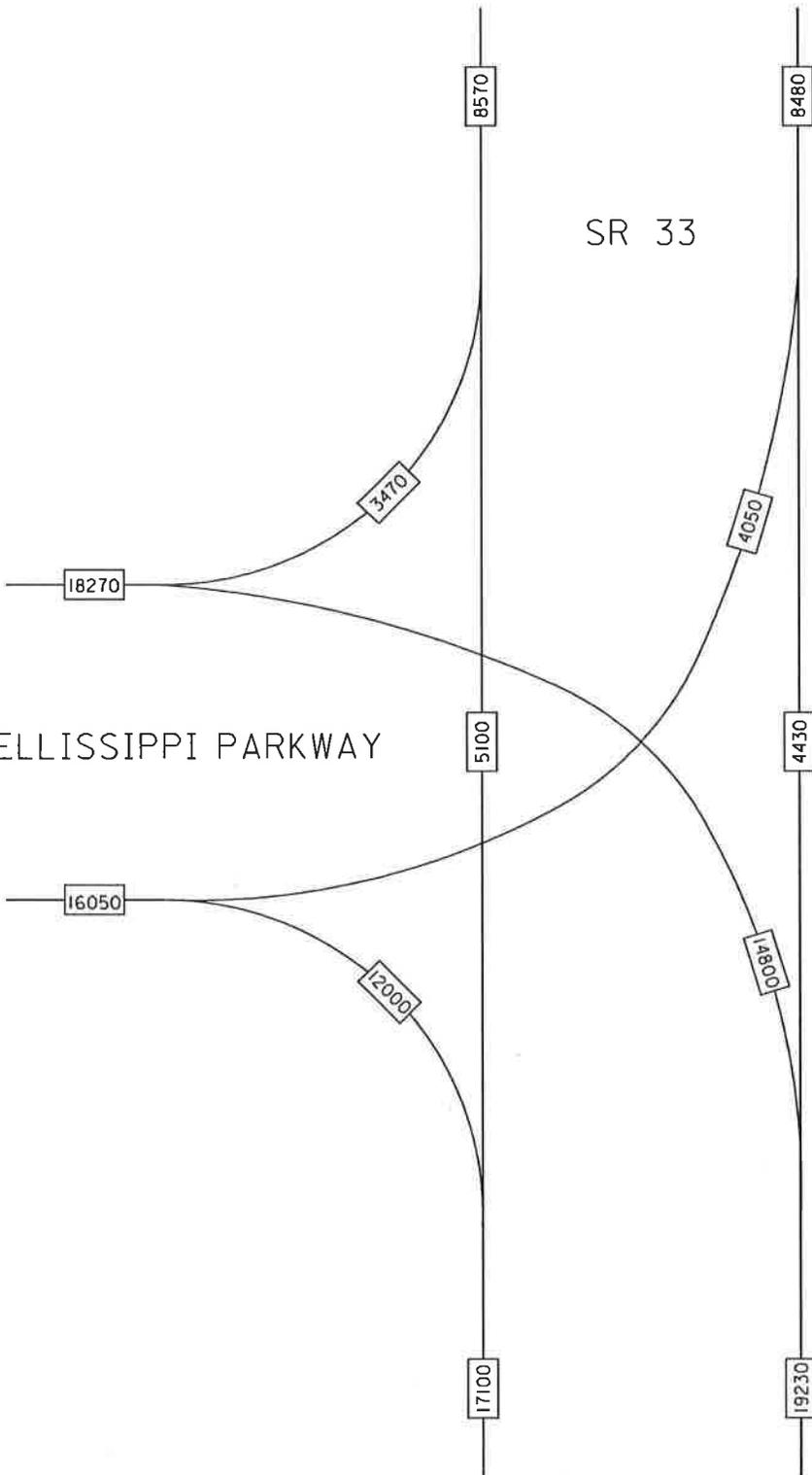
SR 115/US 129 @ SR 35



NOT TO SCALE

SR 33

PELLISSIPPI PARKWAY

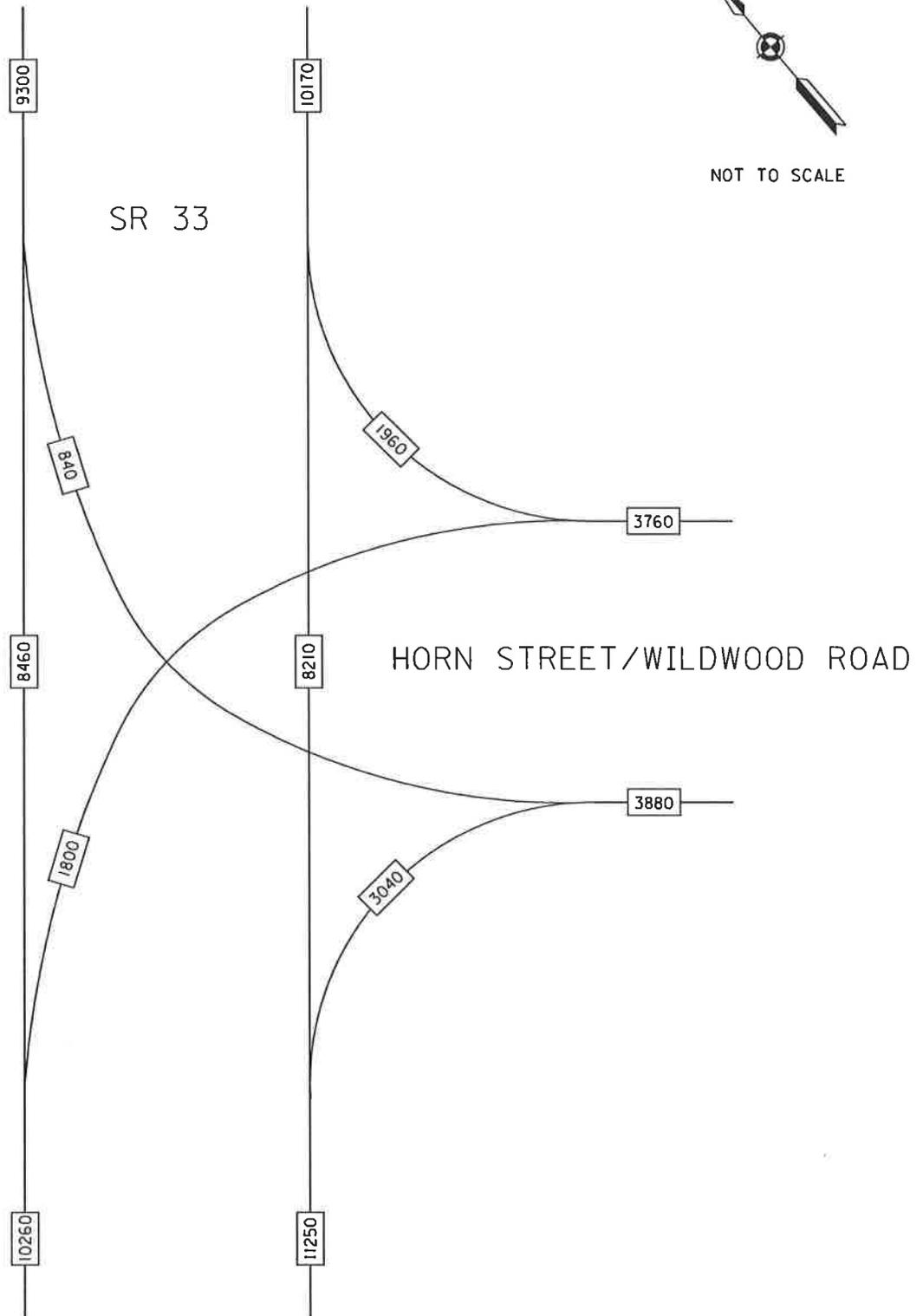


2040 AADT NO PPE

SR 33 @ PELLISSIPPI PARKWAY



NOT TO SCALE

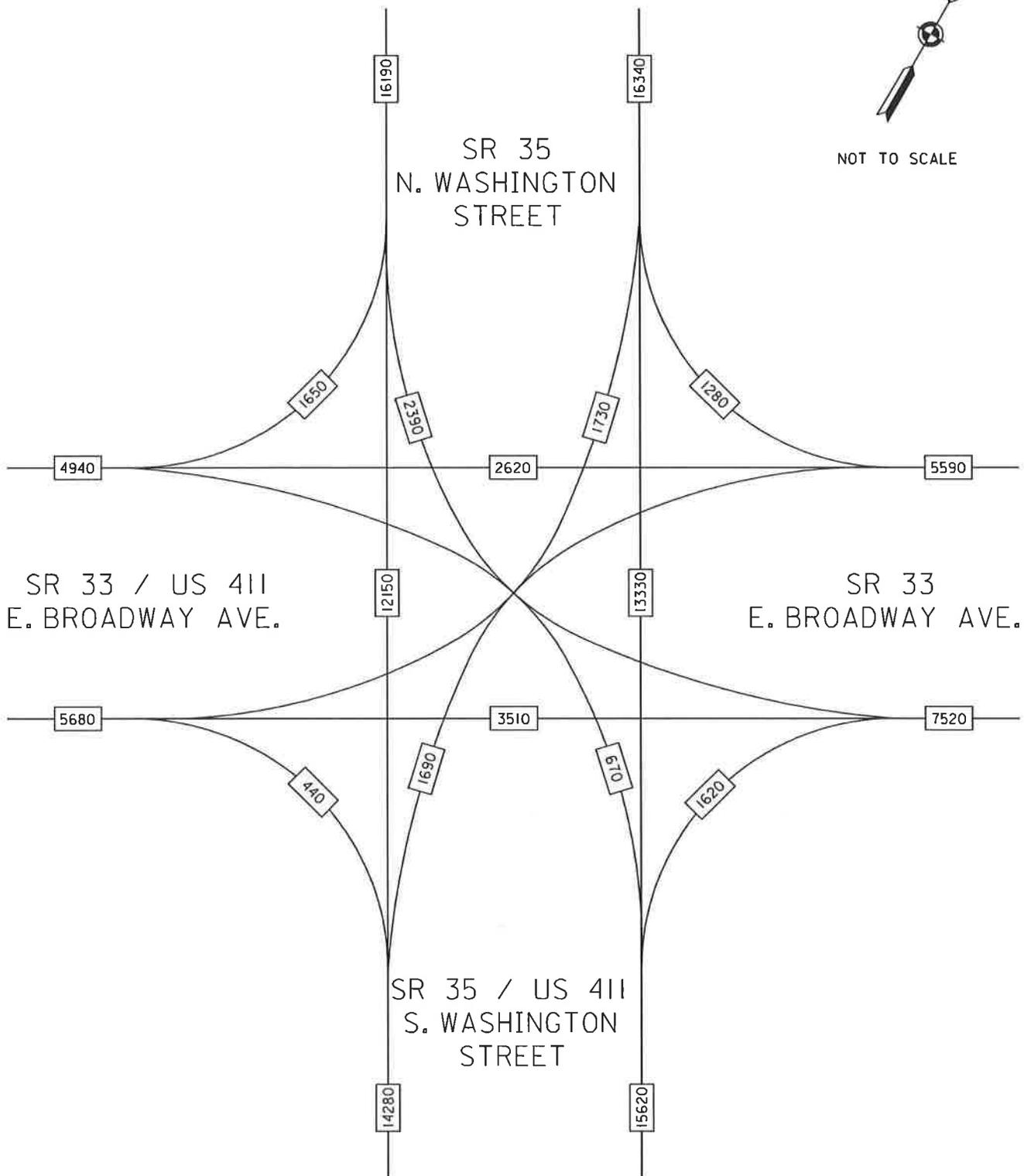


2040 AADT NO PPE

SR 33 @ HORN STREET/
WILDWOOD ROAD



NOT TO SCALE



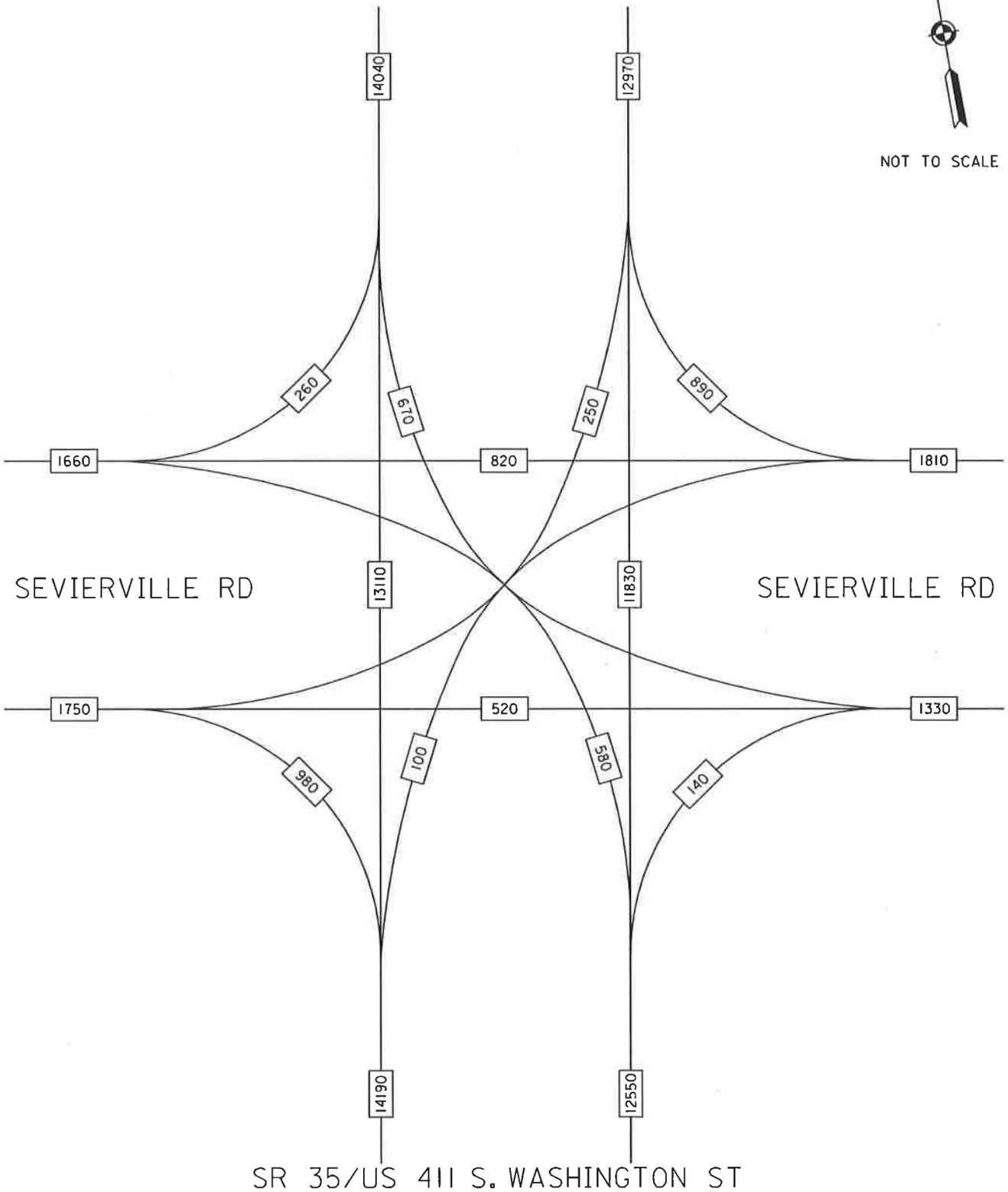
2040 AADT NO PPE

SR 33 @ SR 35

SR 35/N. WASHINGTON ST



NOT TO SCALE

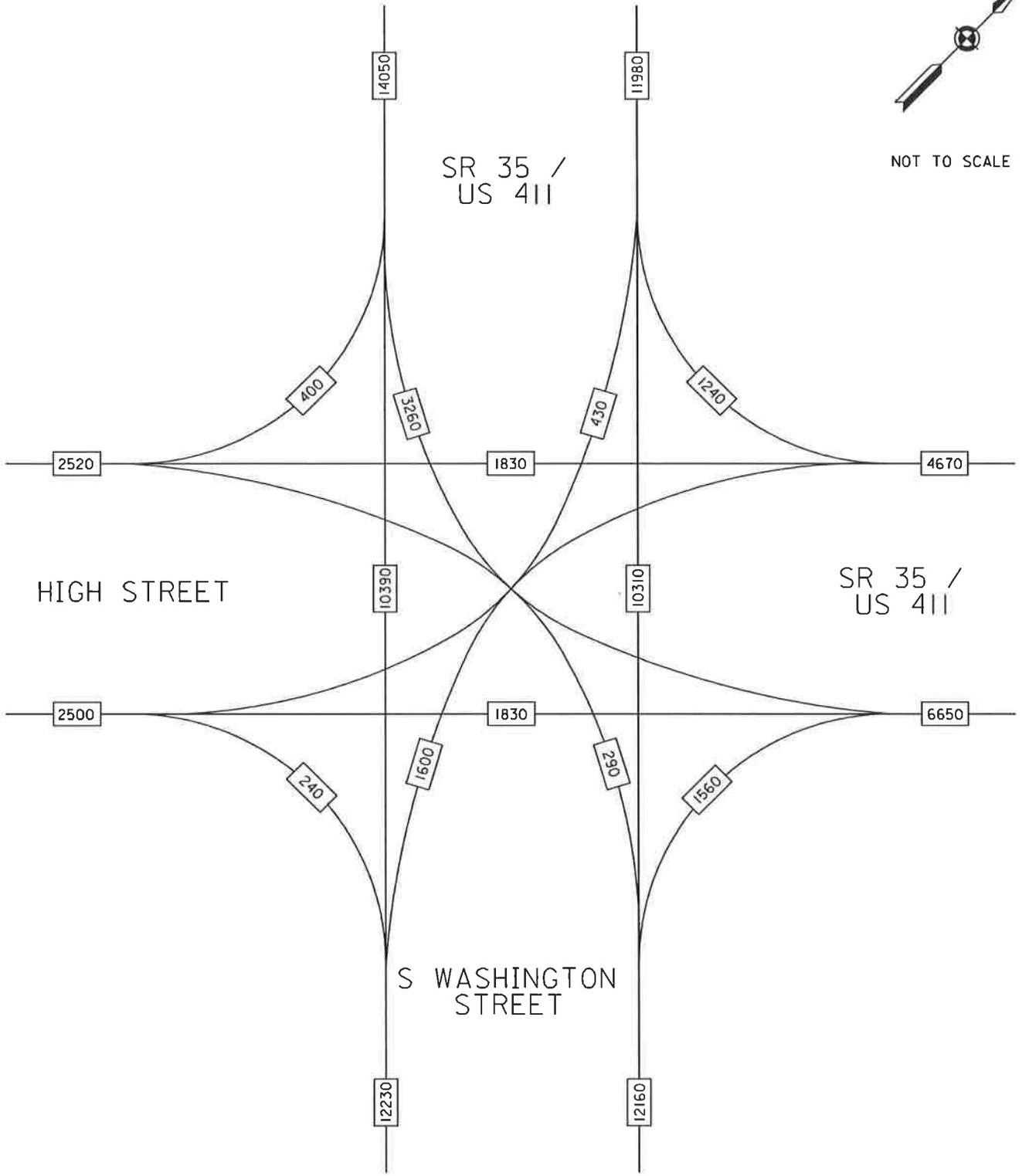


2040 AADT NO PPE

SEVIERVILLE RD @
SR 35/US 411 WASHINGTON ST



NOT TO SCALE

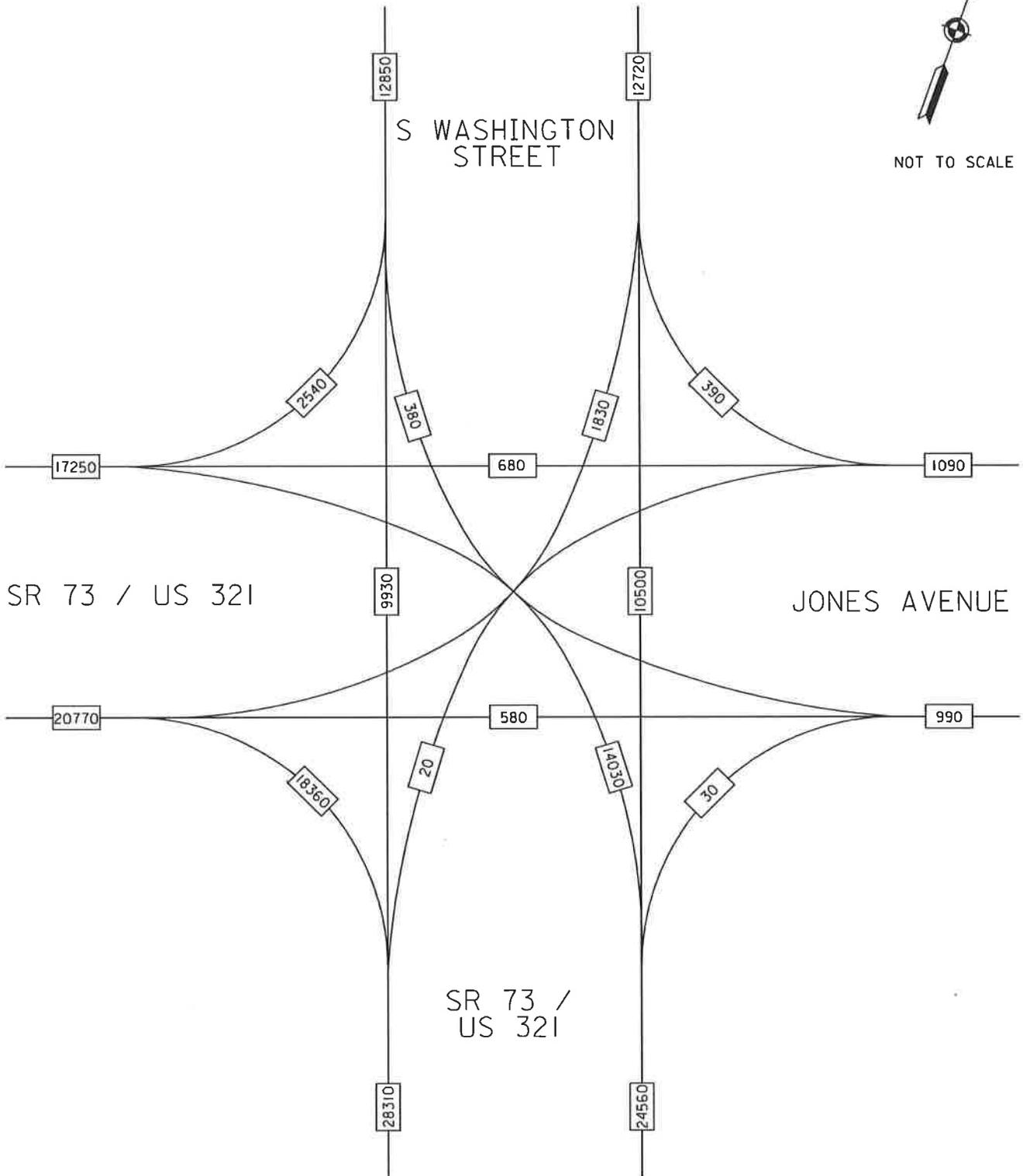


2040 AADT NO PPE

S WASHINGTON ST / SR 35
@ HIGH ST / SR 35



NOT TO SCALE

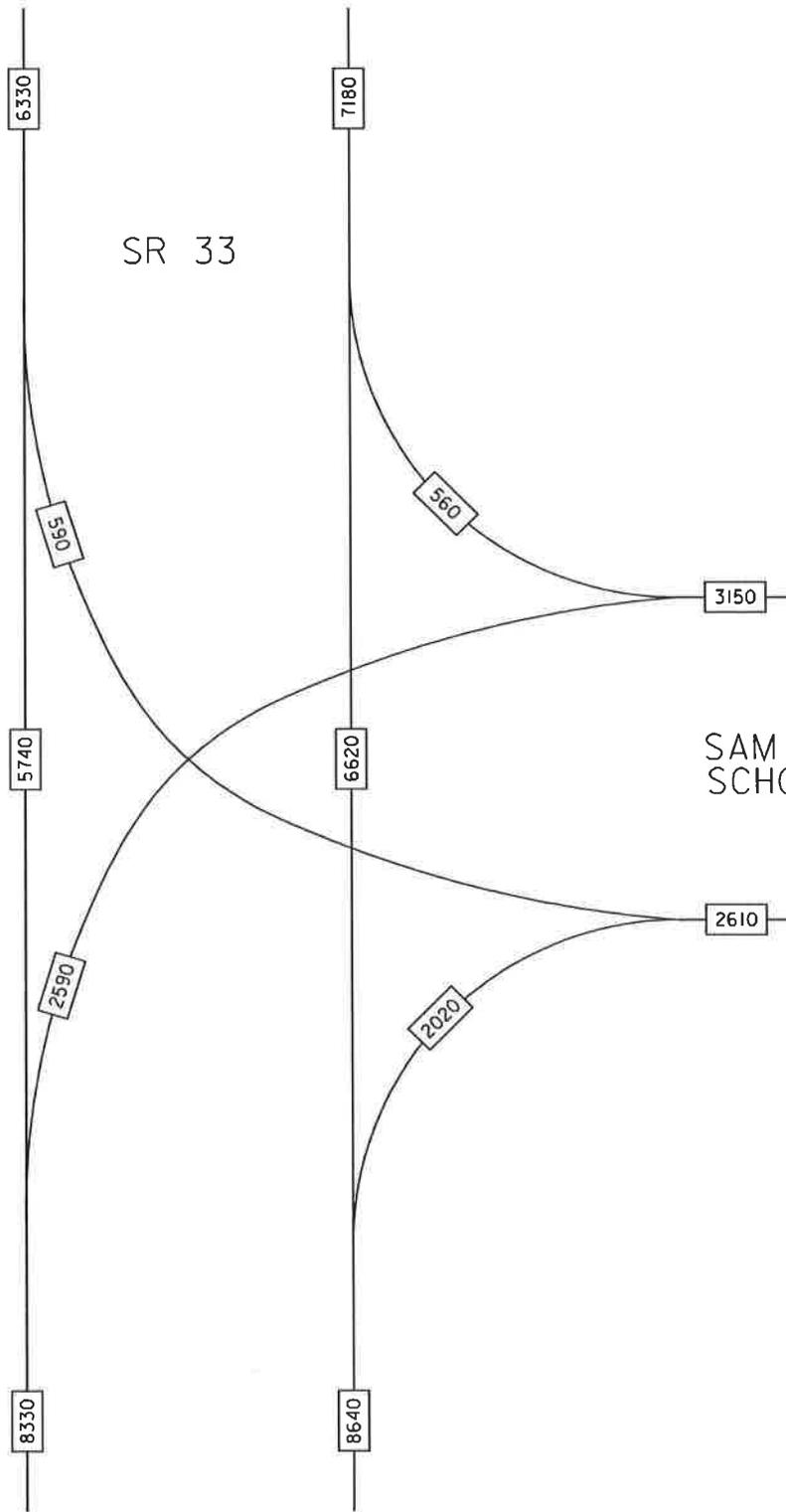


2040 AADT NO PPE

S WASHINGTON ST
@ SR 73/ US 321



NOT TO SCALE



SR 33

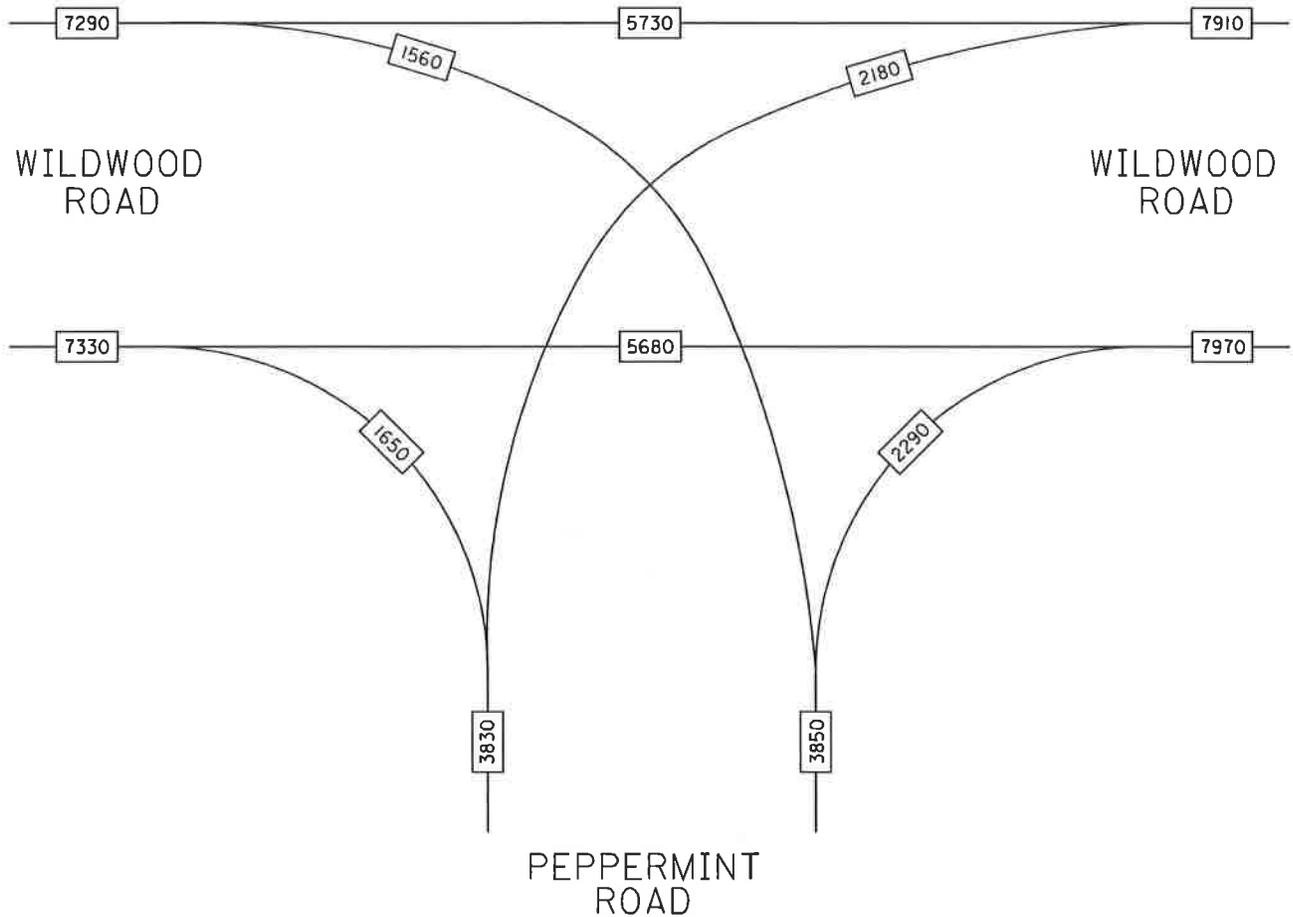
SAM HOUSTON
SCHOOL ROAD

2040 AADT NO PPE

SR 33 @
SAM HOUSTON SCHOOL ROAD



NOT TO SCALE



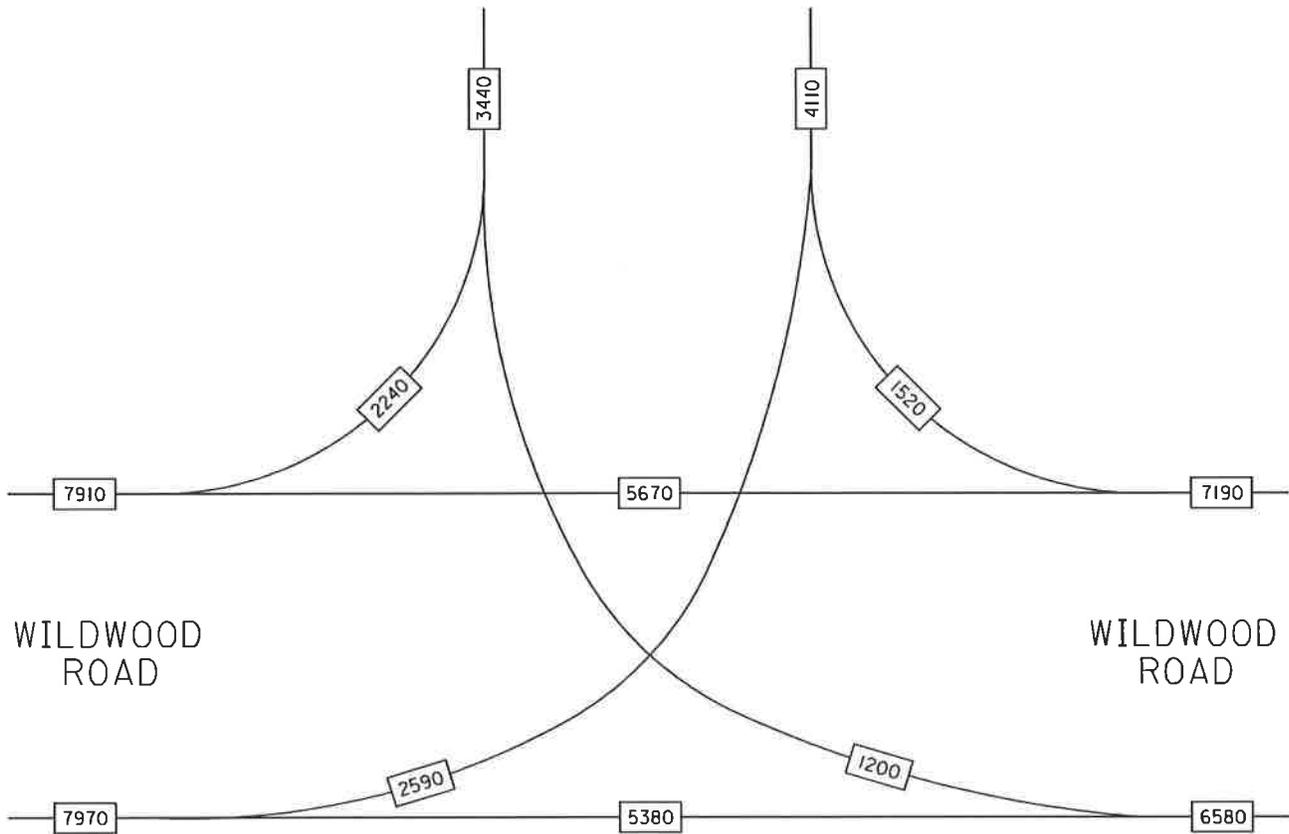
2040 AADT NO PPE

PEPPERMINT ROAD @
WILDWOOD ROAD



NOT TO SCALE

SAM HOUSTON SCHOOL ROAD

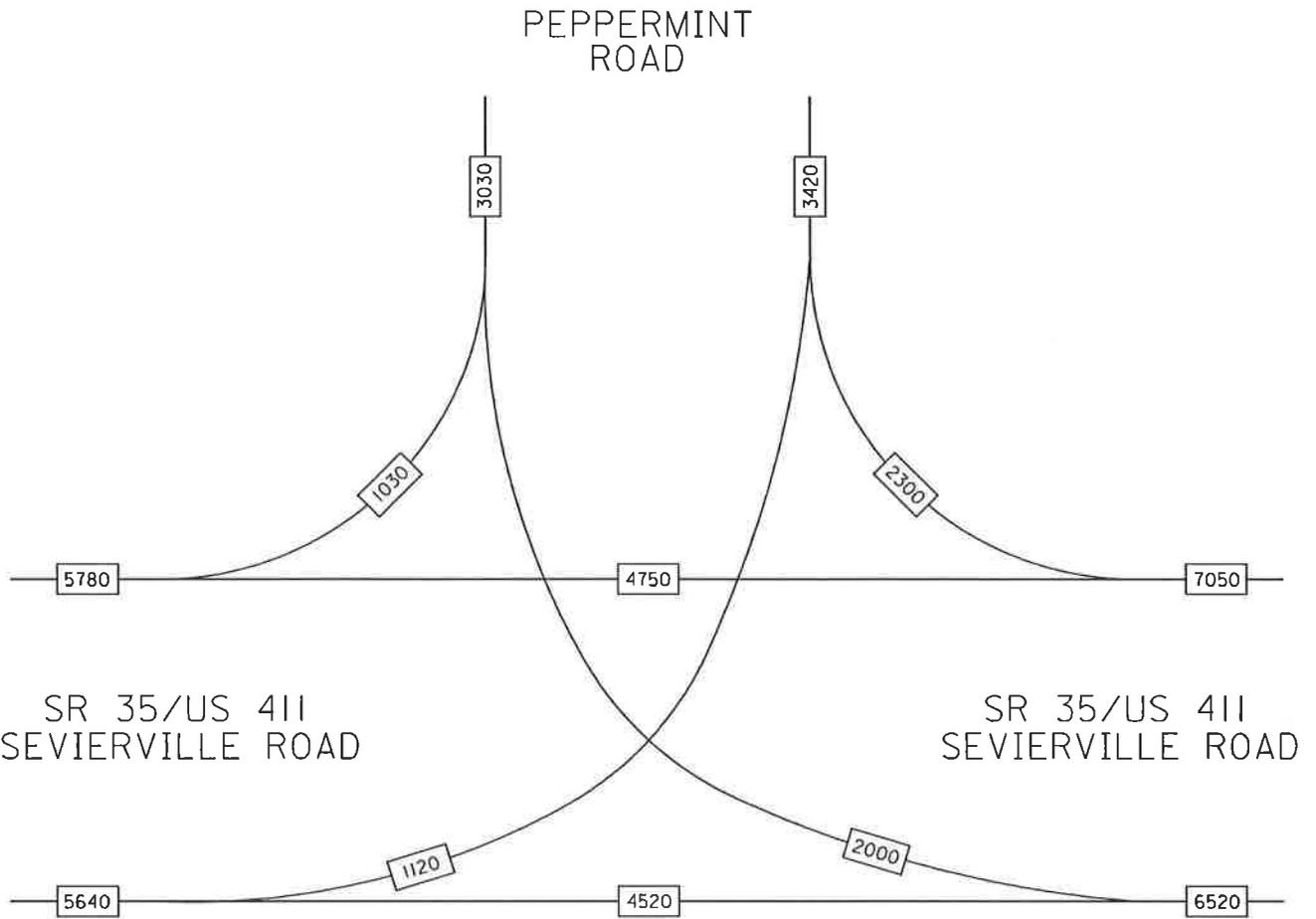


2040 AADT NO PPE

SAM HOUSTON SCHOOL ROAD @
WILDWOOD ROAD



NOT TO SCALE



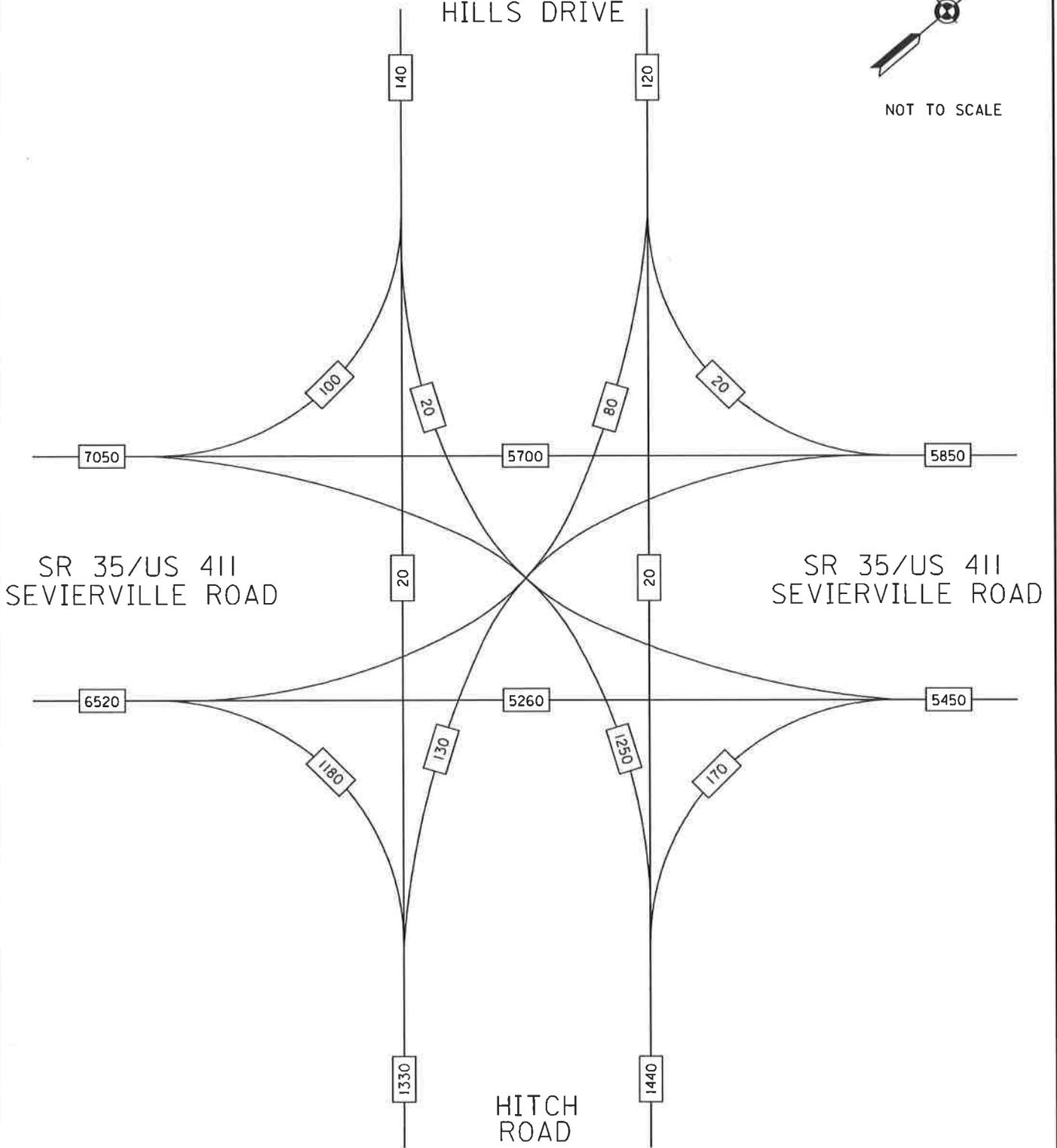
2040 AADT NO PPE

SR 35/US 411/SEVIERVILLE ROAD @
PEPPERMINT ROAD

PEPPERMINT HILLS DRIVE



NOT TO SCALE

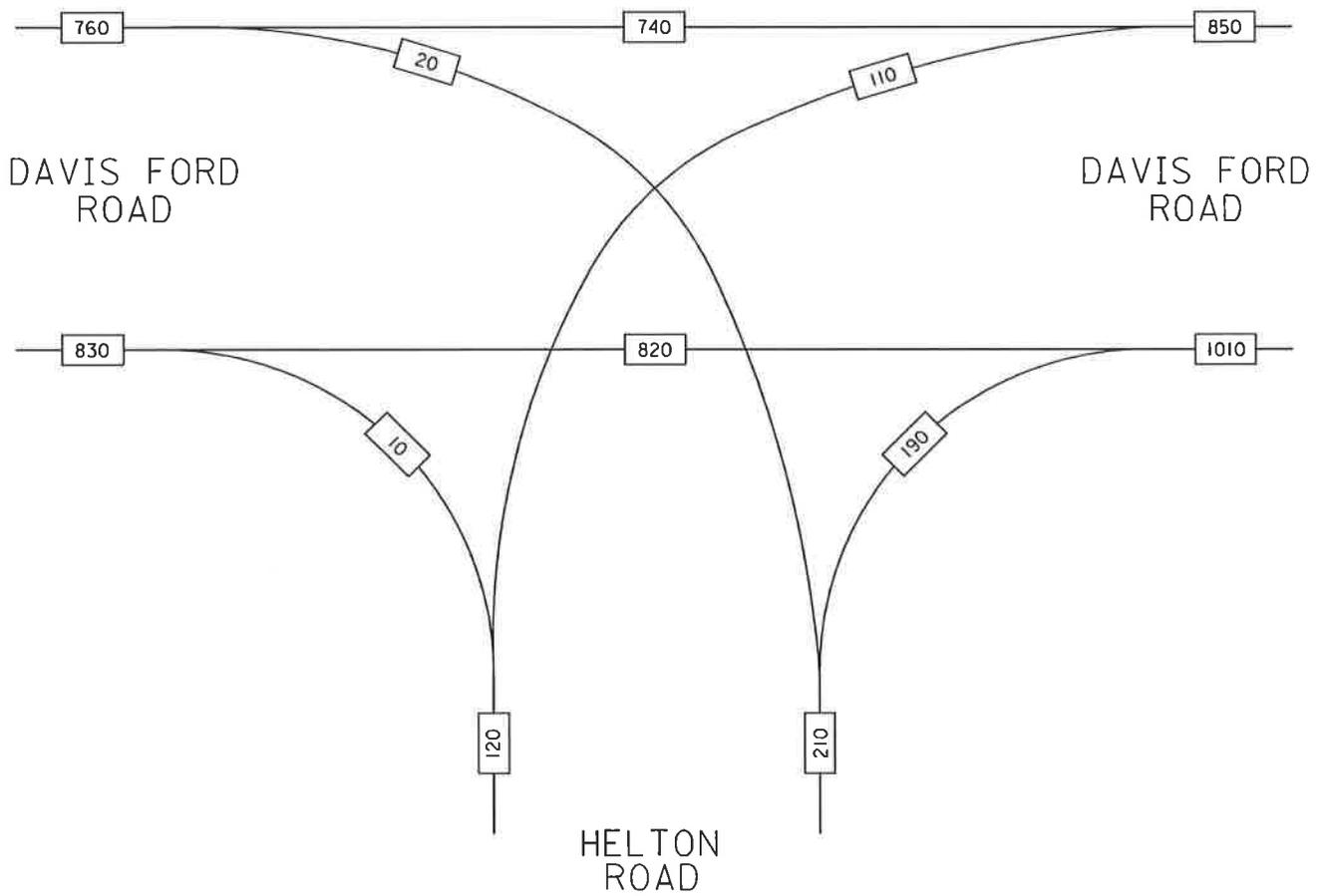


2040 AADT NO PPE

SR 35/US 411/SEVIERVILLE ROAD @ HITCH ROAD/PEPPERMINT HILLS DR



NOT TO SCALE

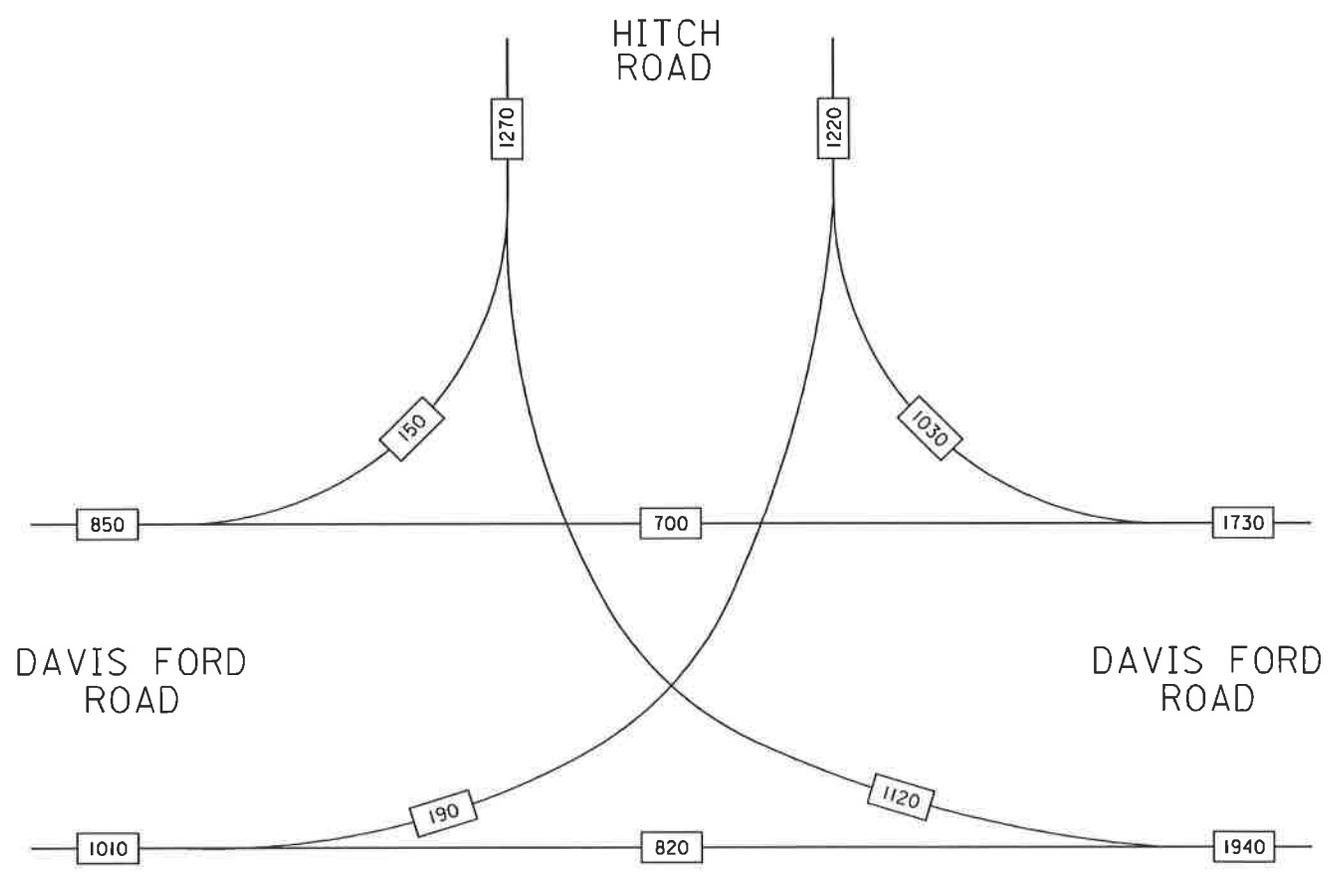


2040 AADT NO PPE

DAVIS FORD ROAD @
HELTON ROAD



NOT TO SCALE



DAVIS FORD ROAD

DAVIS FORD ROAD

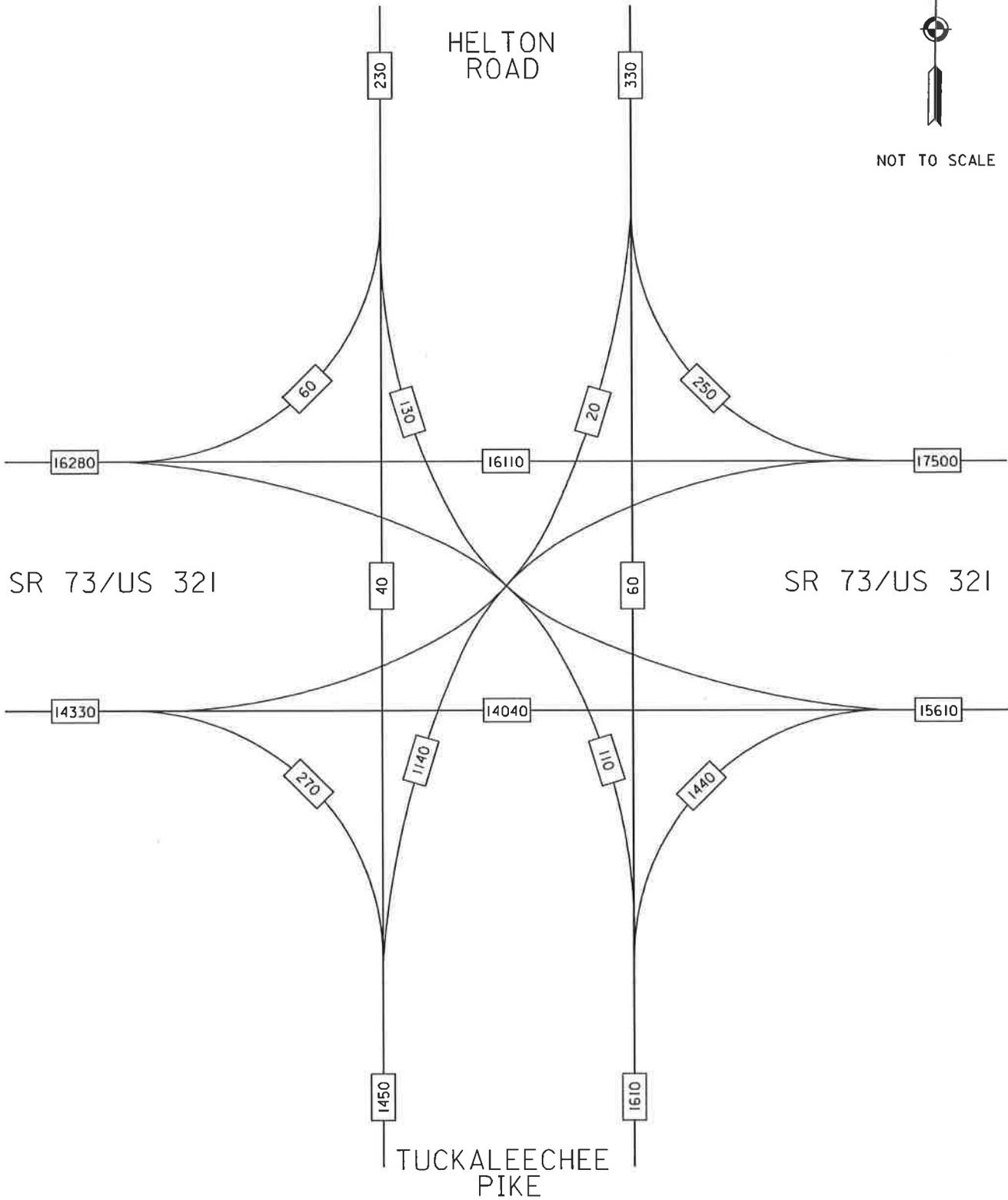
HITCH ROAD

2040 AADT NO PPE

DAVIS FORD ROAD @ HITCH ROAD



NOT TO SCALE



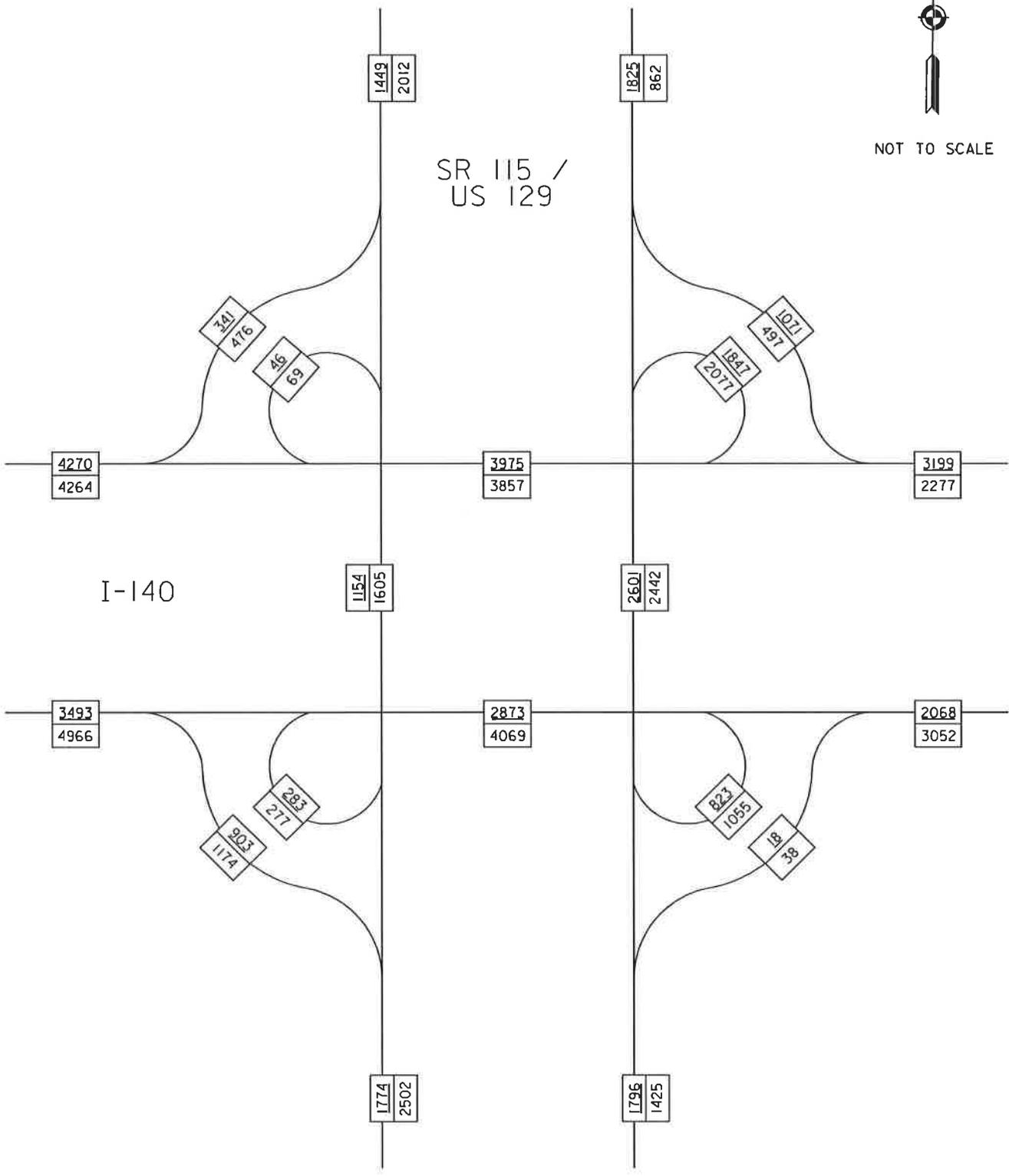
2040 AADT NO PPE

SR 73/US 321 @
HELTON ROAD/TUCKALEECHEE PIKE



NOT TO SCALE

SR 115 /
US 129

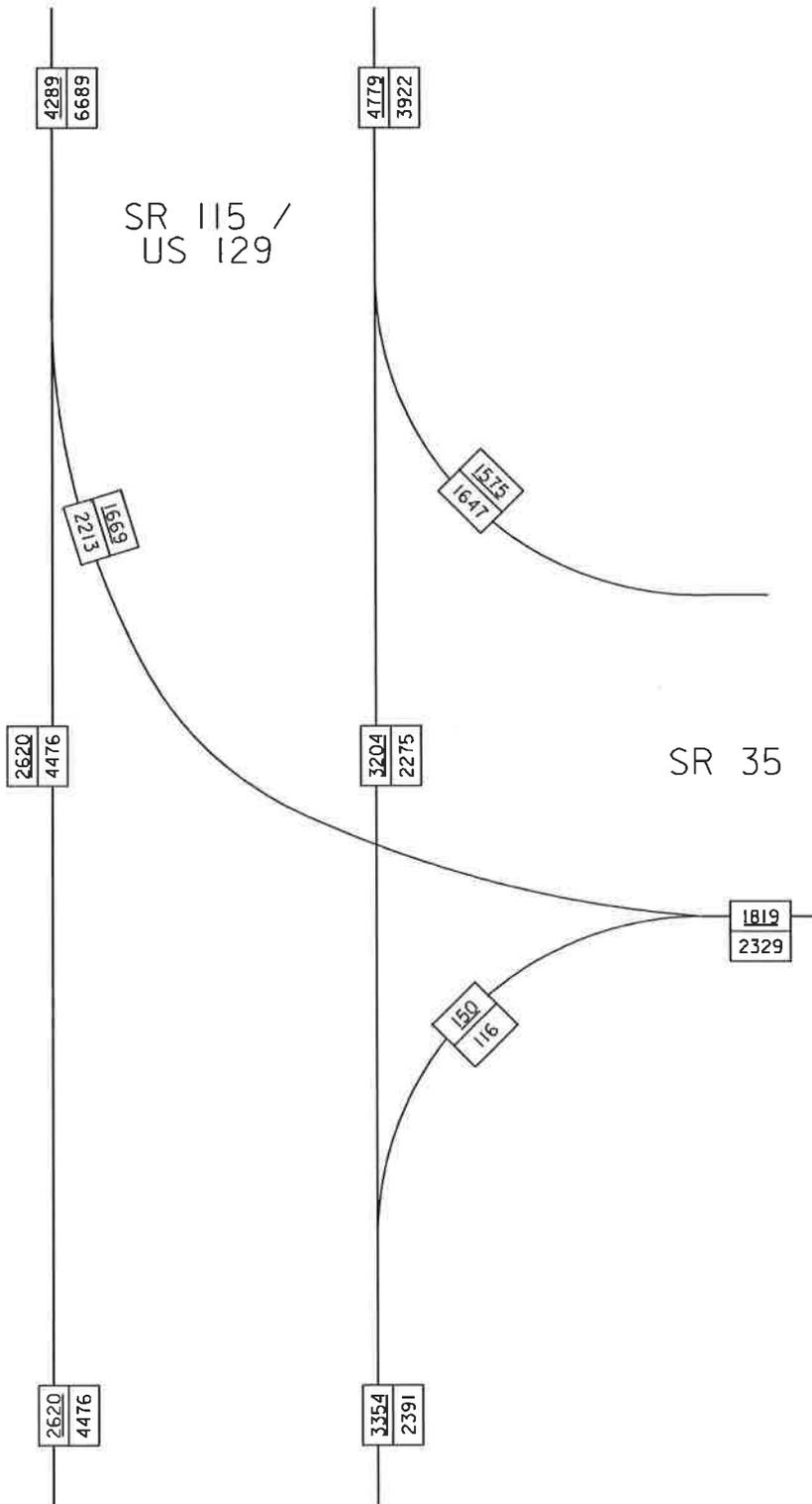


2040 DHV NO PPE
AM / PM

SR 115/US 129 @
I-140 / PELLISSIPPI PARKWAY



NOT TO SCALE



2040 DHV NO PPE
AM / PM

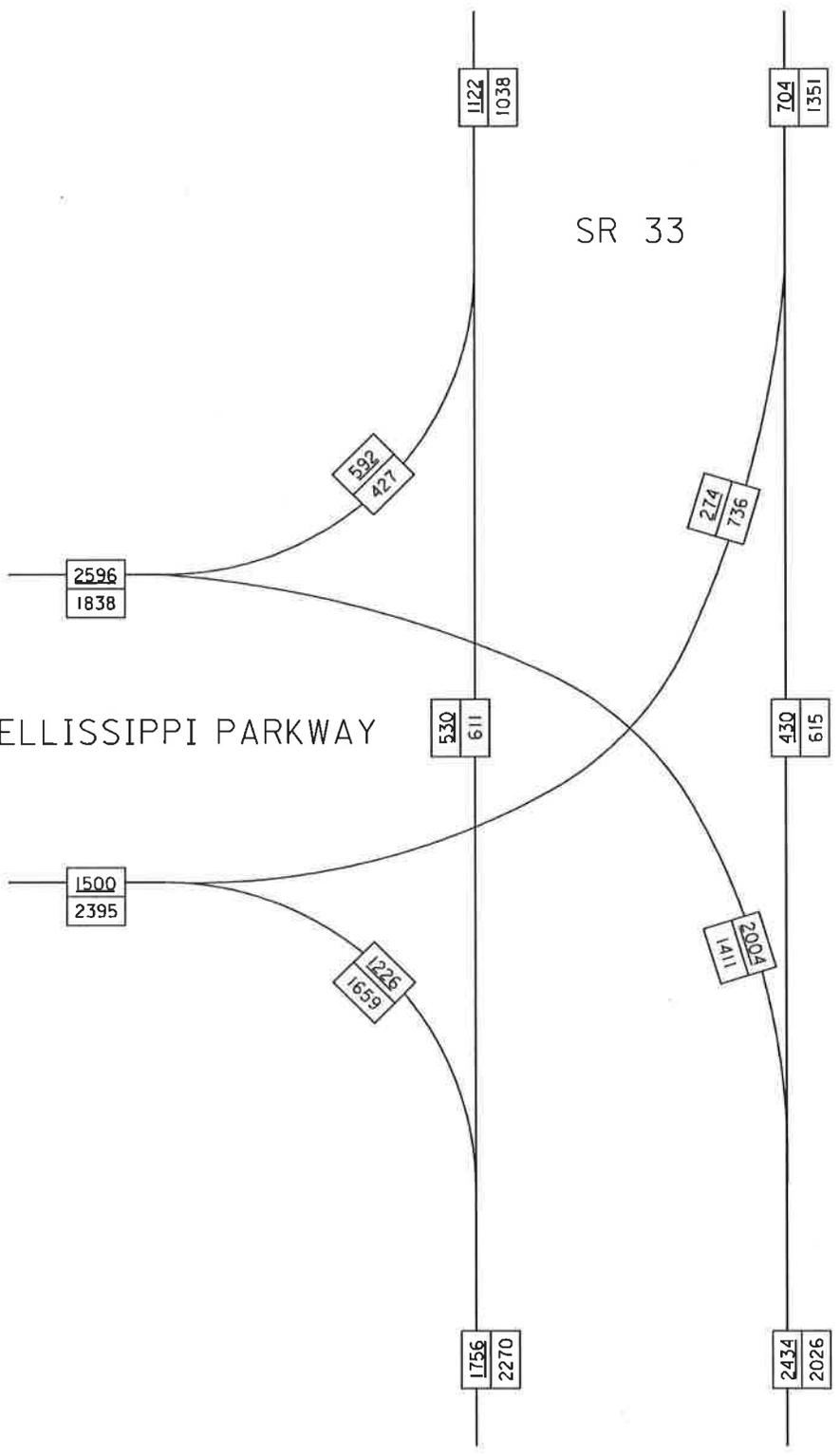
SR 115/US 129 @ SR 35



NOT TO SCALE

SR 33

PELLISSIPPI PARKWAY

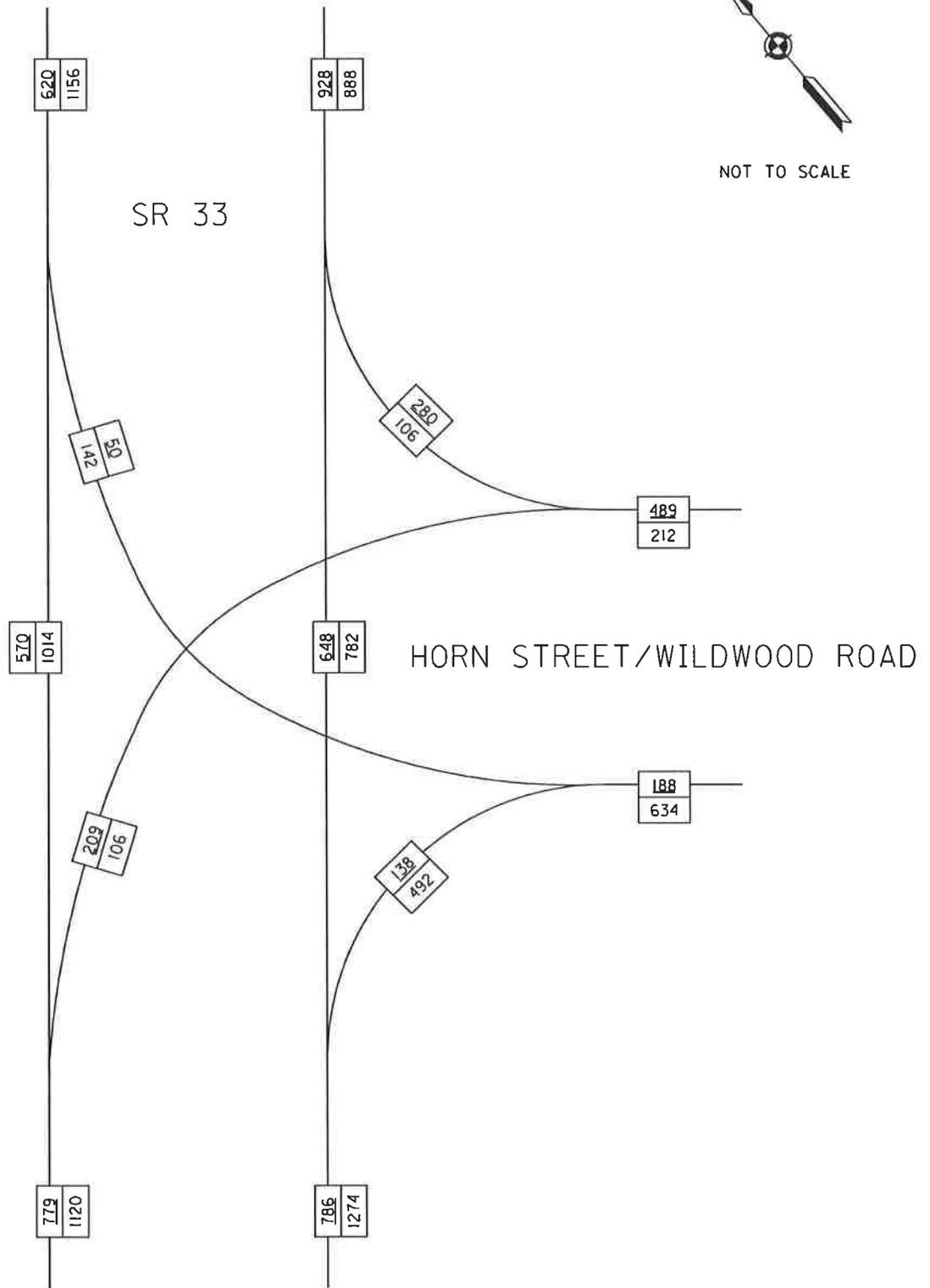


2040 DHV NO PPE
AM / PM

SR 33 @ PELLISSIPPI PARKWAY



NOT TO SCALE

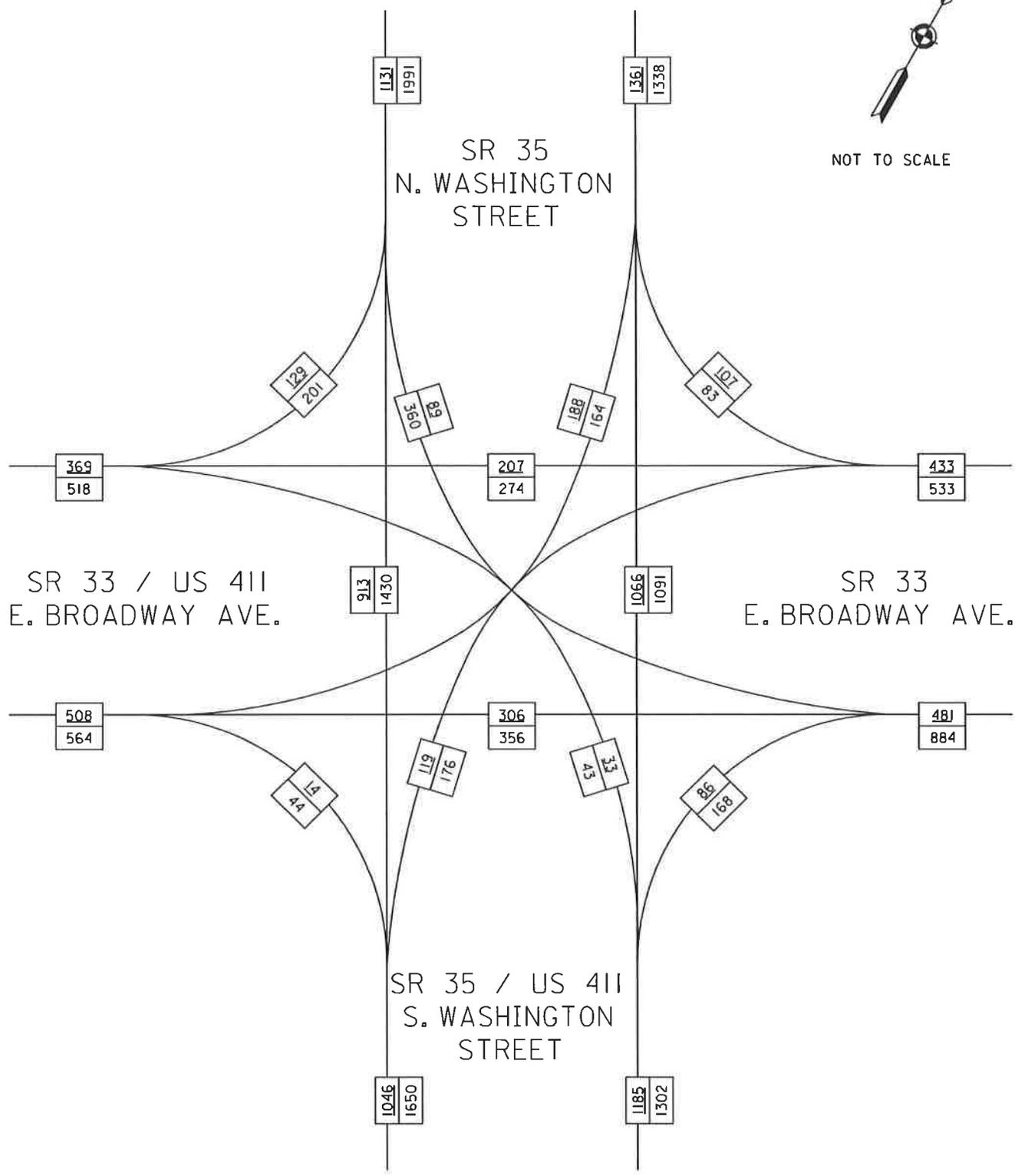


2040 DHV NO PPE
AM / PM

SR 33 @ HORN STREET/
WILDWOOD ROAD



NOT TO SCALE



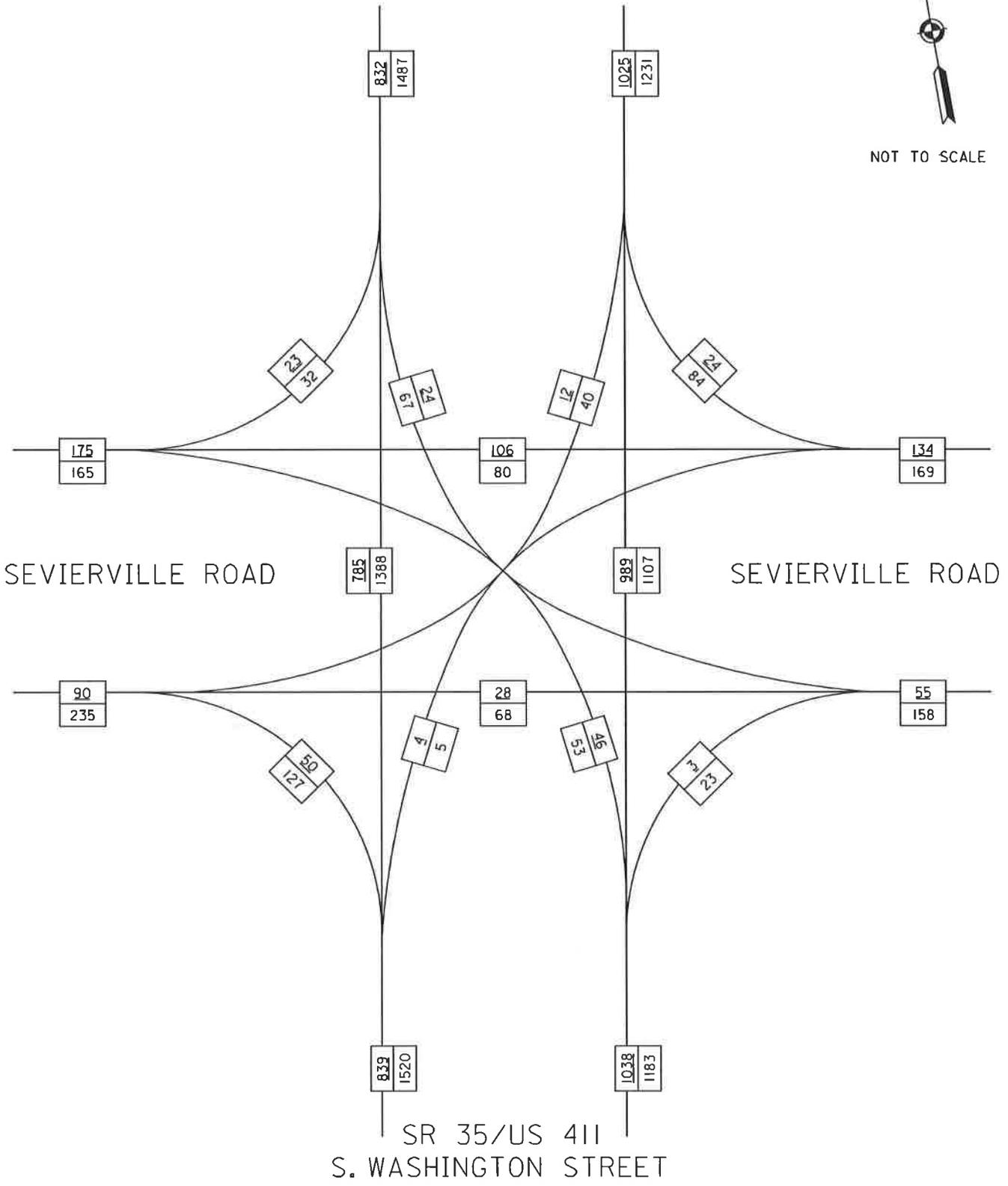
2040 DHV NO PPE
AM / PM

SR 33 @ SR 35

SR 35/
N. WASHINGTON STREET



NOT TO SCALE

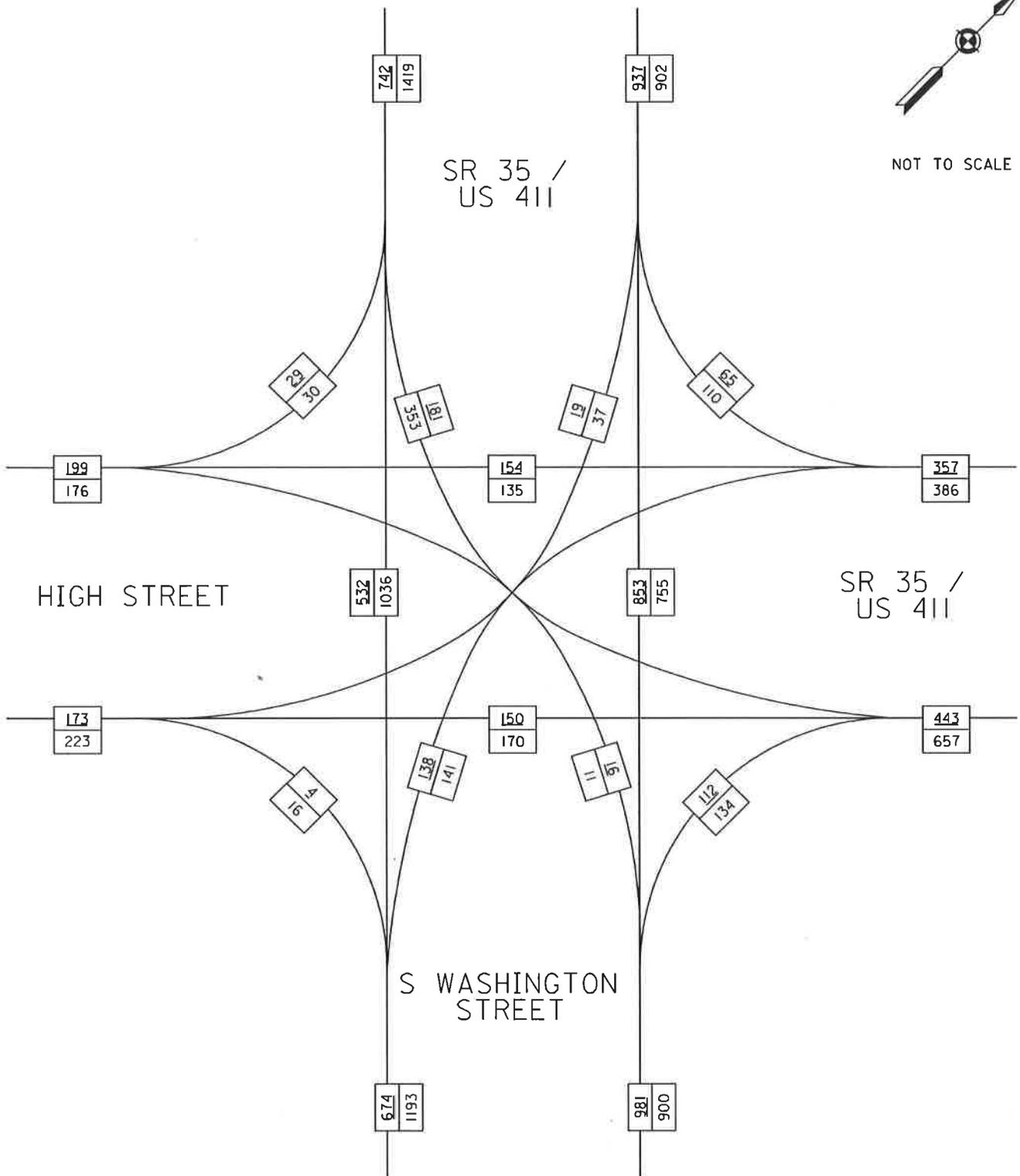


2040 DHV NO PPE
AM / PM

SEVIERVILLE ROAD @
SR 35/WASHINGTON STREET



NOT TO SCALE

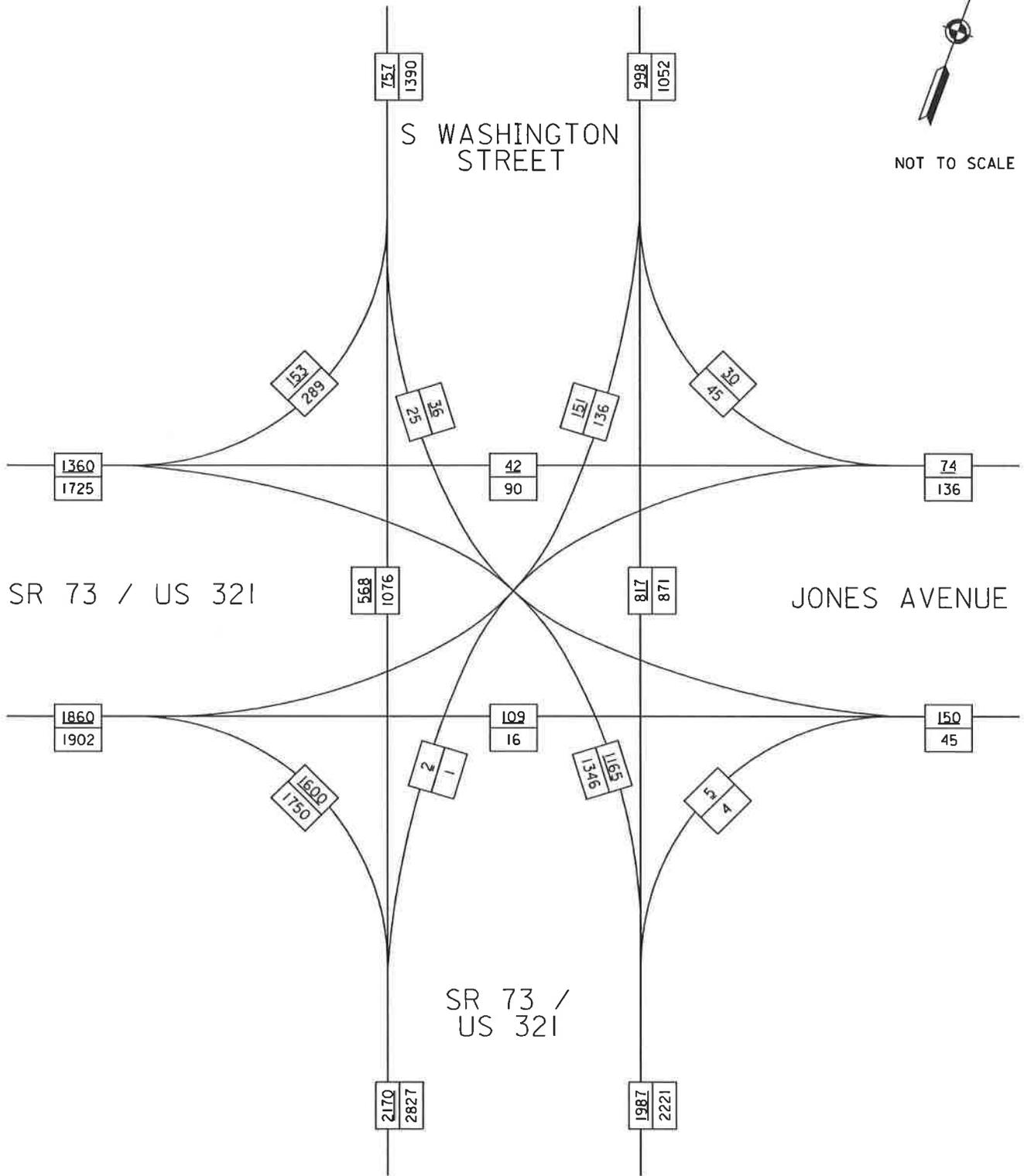


2040 DHV NO PPE
AM / PM

S WASHINGTON ST / SR 35
@ HIGH ST / SR 35



NOT TO SCALE

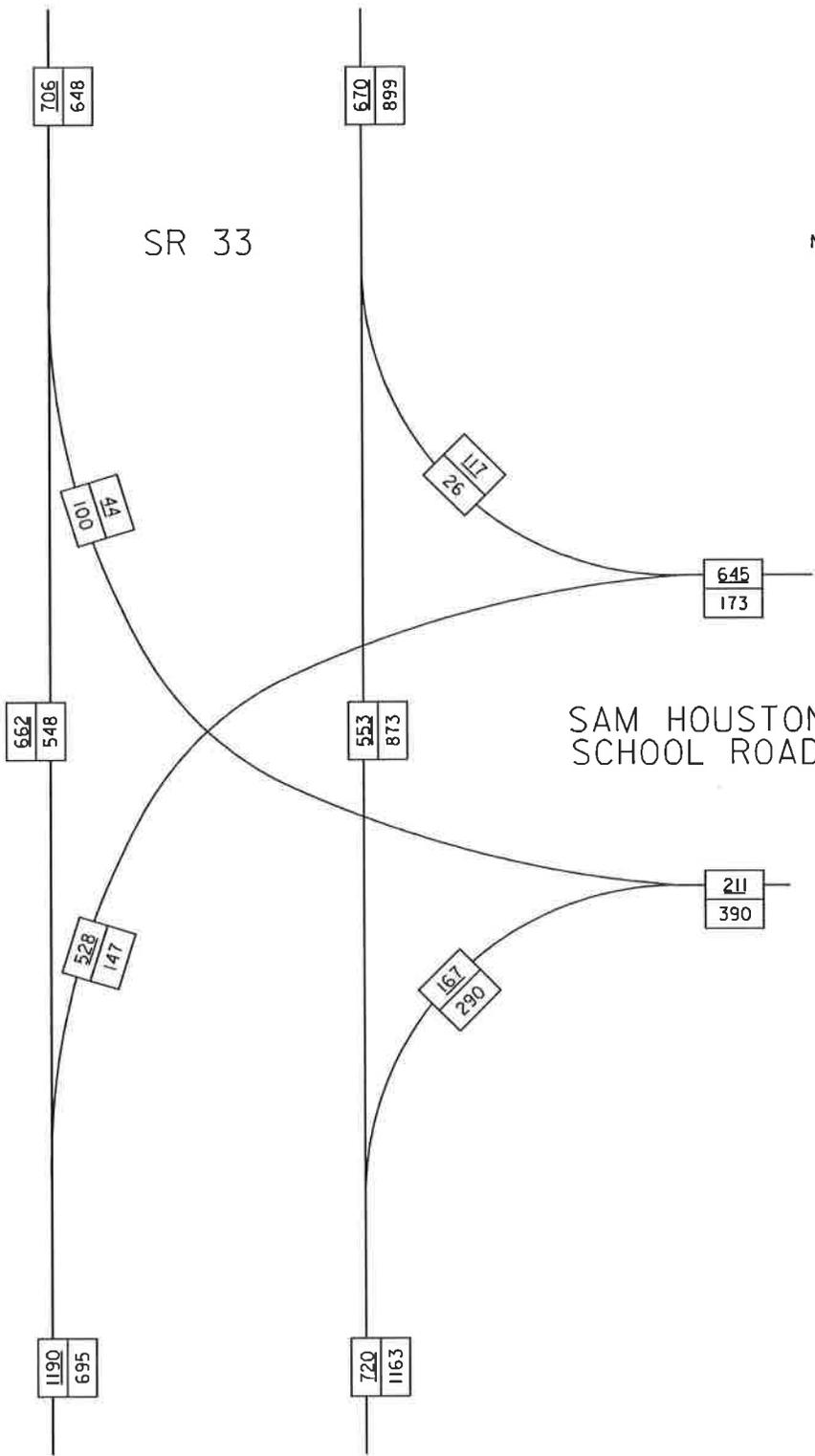


2040 DHV NO PPE
AM / PM

S WASHINGTON ST
@ SR 73/ US 321



NOT TO SCALE

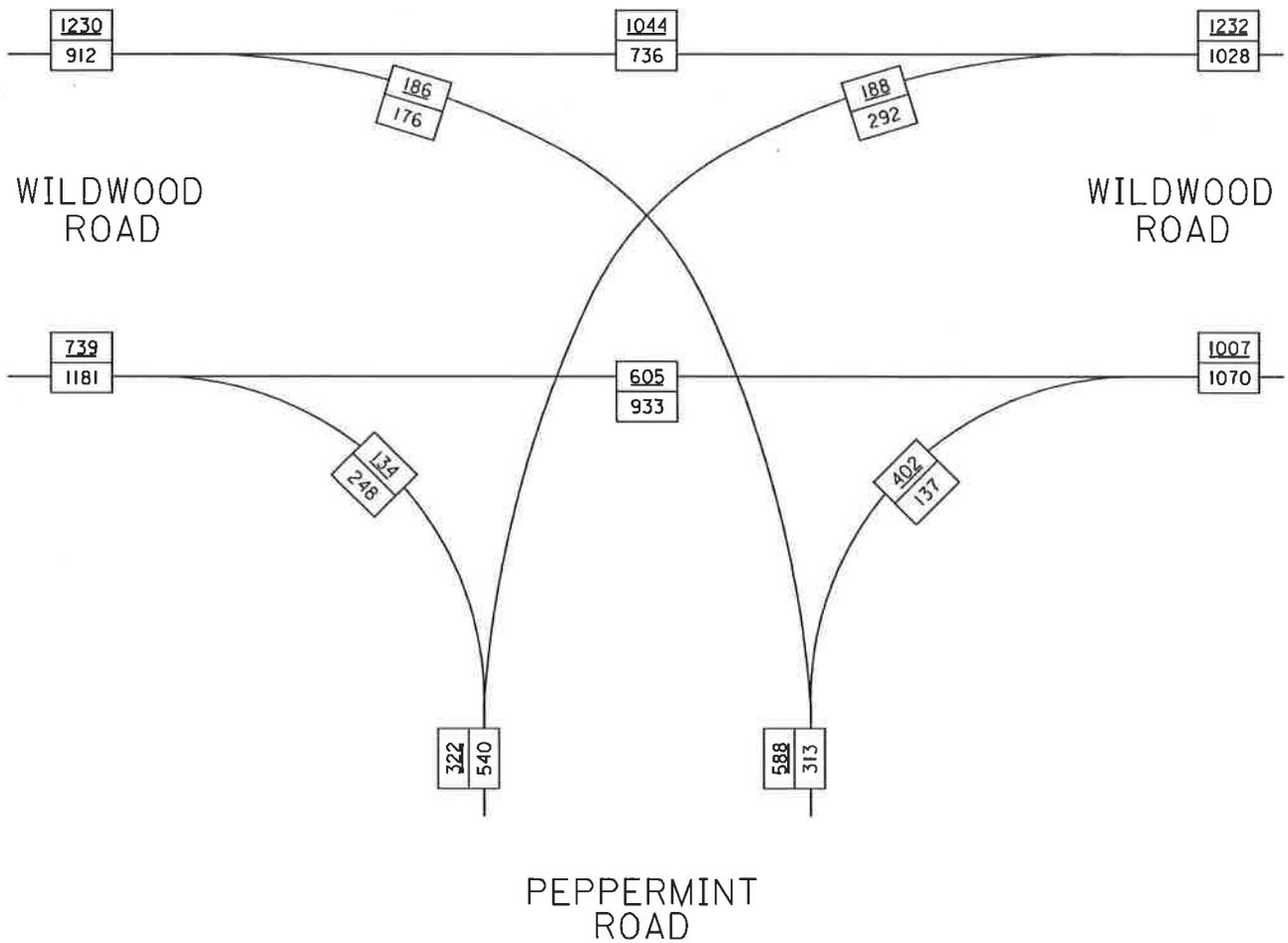


2040 DHV NO PPE
AM/PM

SR 33 @
SAM HOUSTON SCHOOL ROAD



NOT TO SCALE



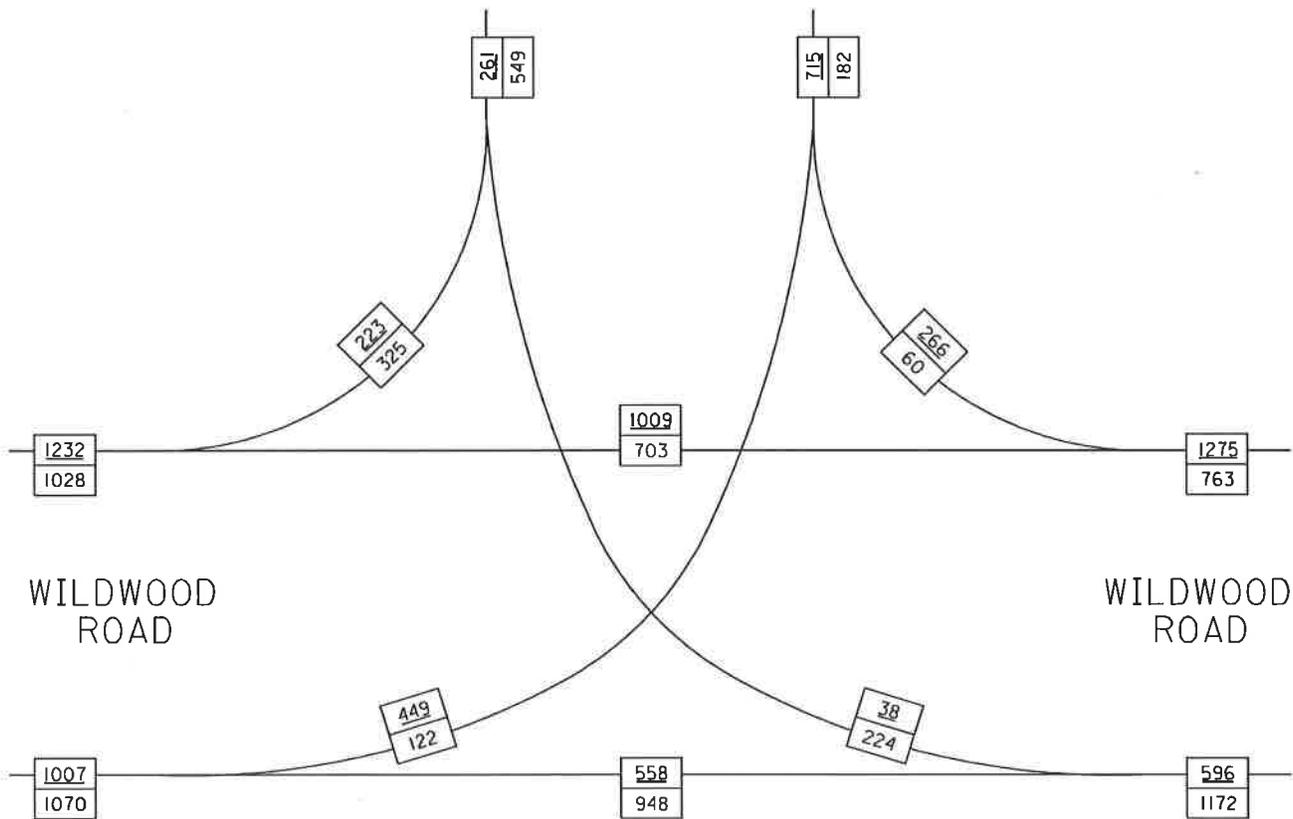
2040 DHV NO PPE
AM/PM

PEPPERMINT ROAD @
WILDWOOD ROAD



NOT TO SCALE

SAM HOUSTON SCHOOL ROAD



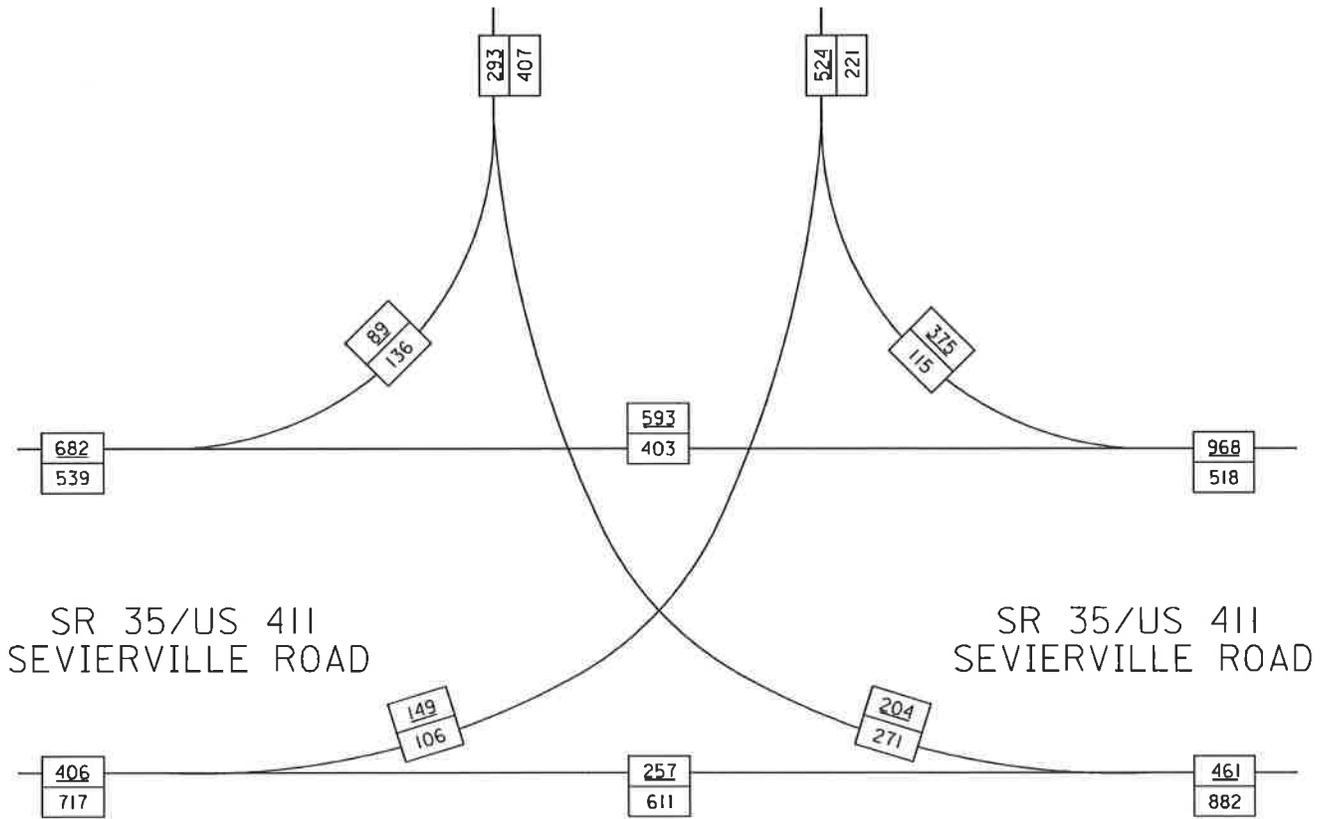
2040 DHV NO PPE
AM/PM

SAM HOUSTON SCHOOL ROAD @
WILDWOOD ROAD



NOT TO SCALE

PEPPERMINT ROAD



SR 35/US 411 SEVIERVILLE ROAD

SR 35/US 411 SEVIERVILLE ROAD

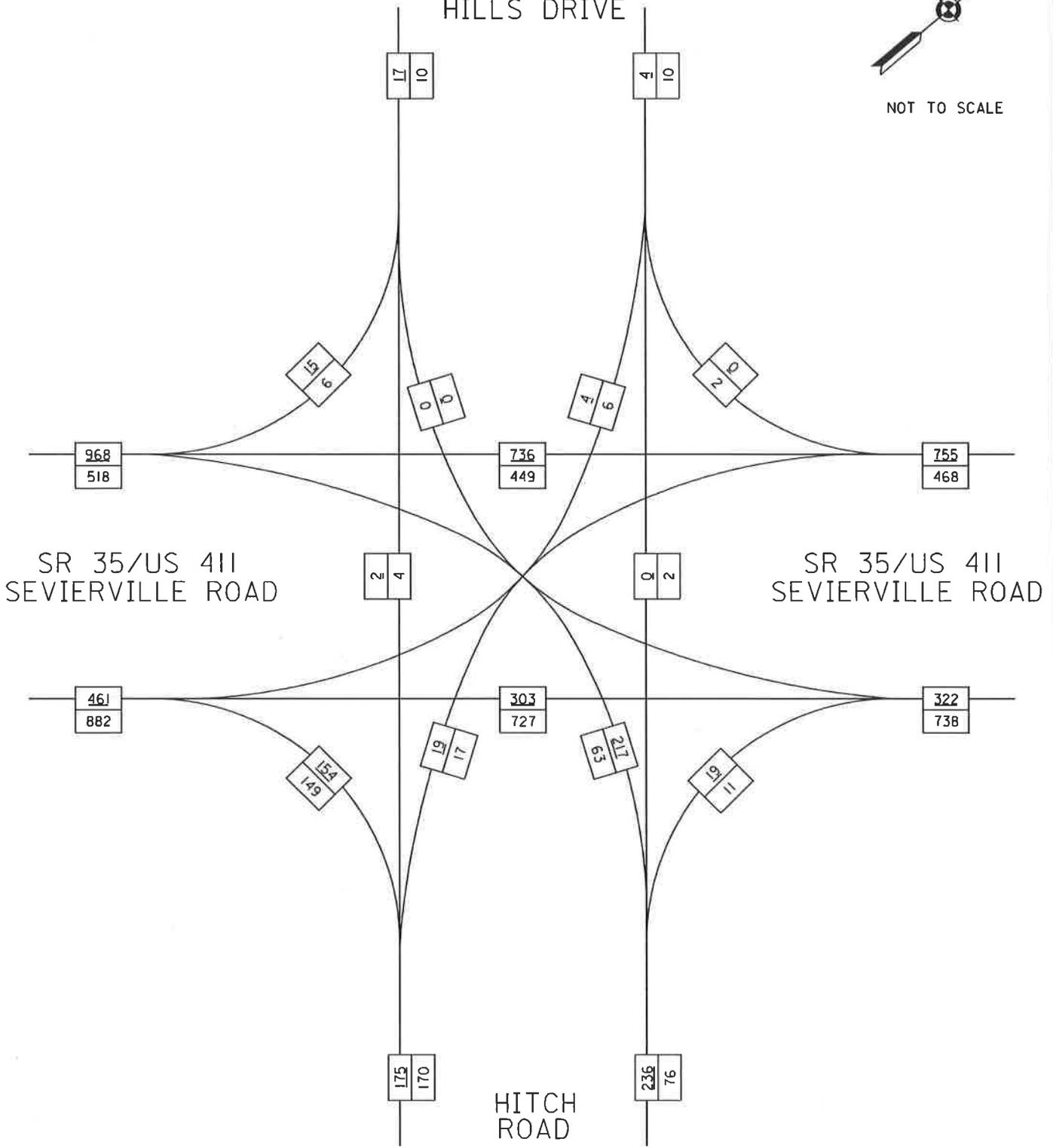
2040 DHV NO PPE
AM/PM

SR 35/US 411/SEVIERVILLE ROAD @
PEPPERMINT ROAD

PEPPERMINT HILLS DRIVE



NOT TO SCALE

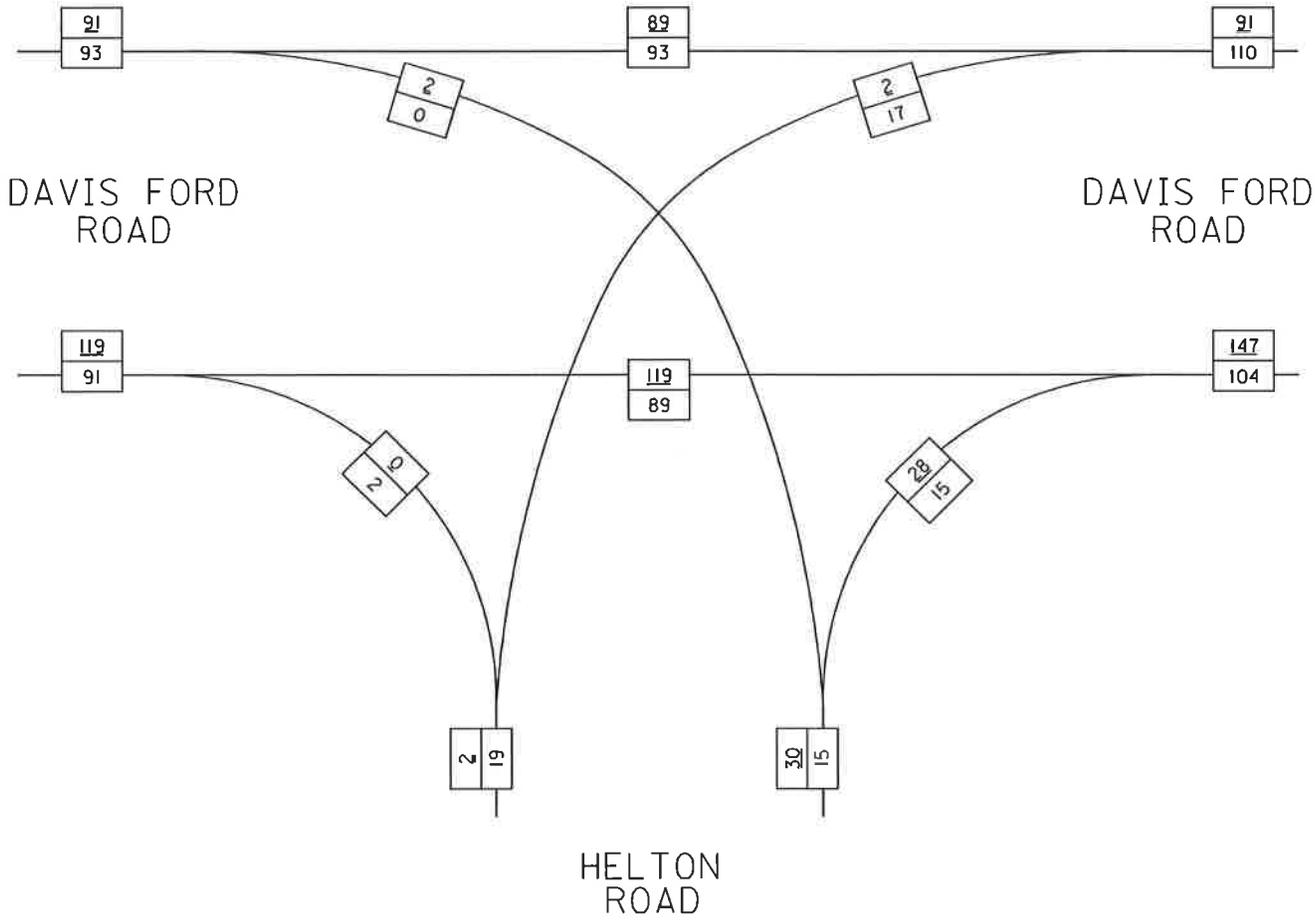


2040 DHV NO PPE
AM/PM

SR 35/US 411/SEVIERVILLE ROAD @
HITCH ROAD/PEPPERMINT HILLS DR



NOT TO SCALE

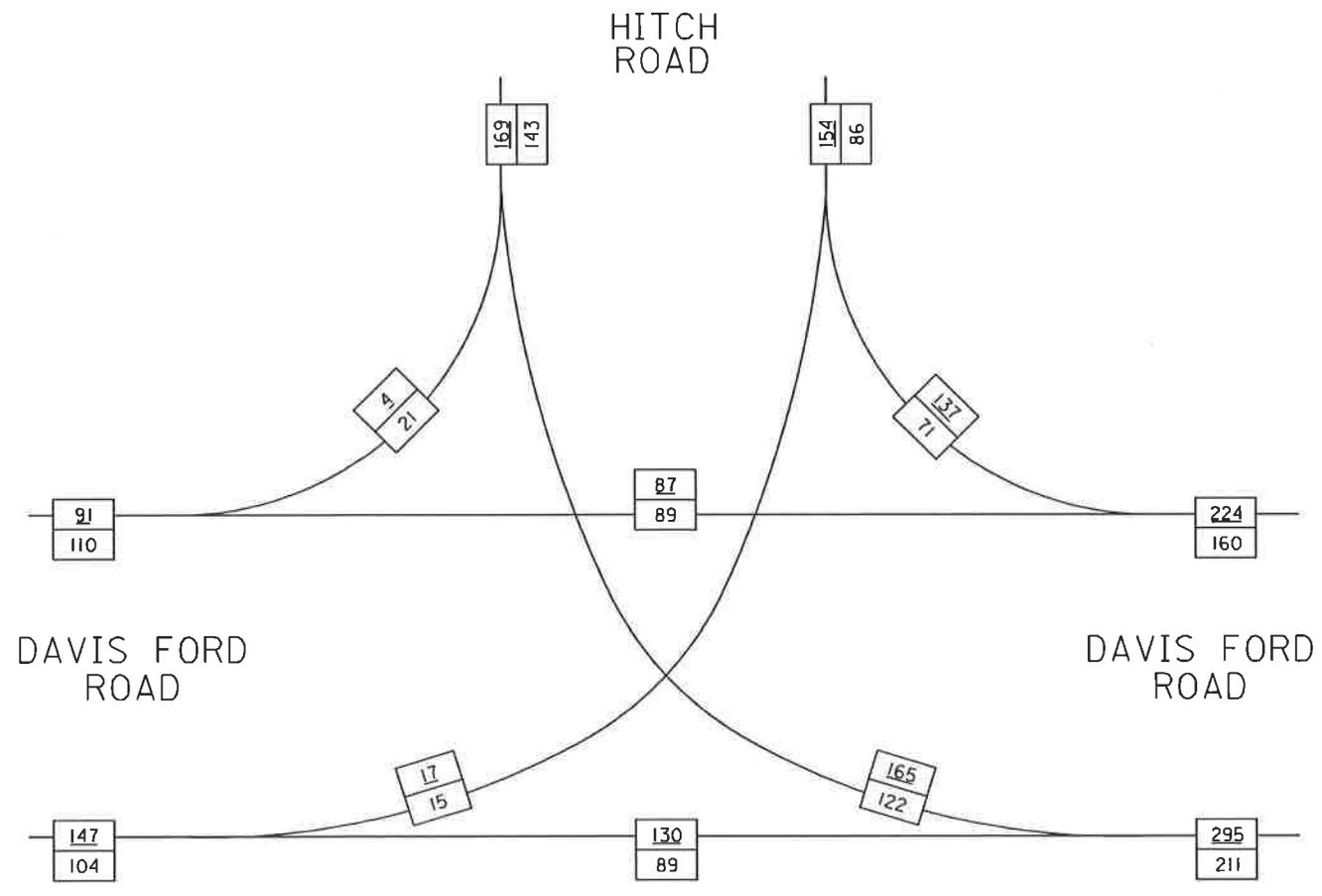


2040 DHV NO PPE
AM/PM

DAVIS FORD ROAD @
HELTON ROAD



NOT TO SCALE

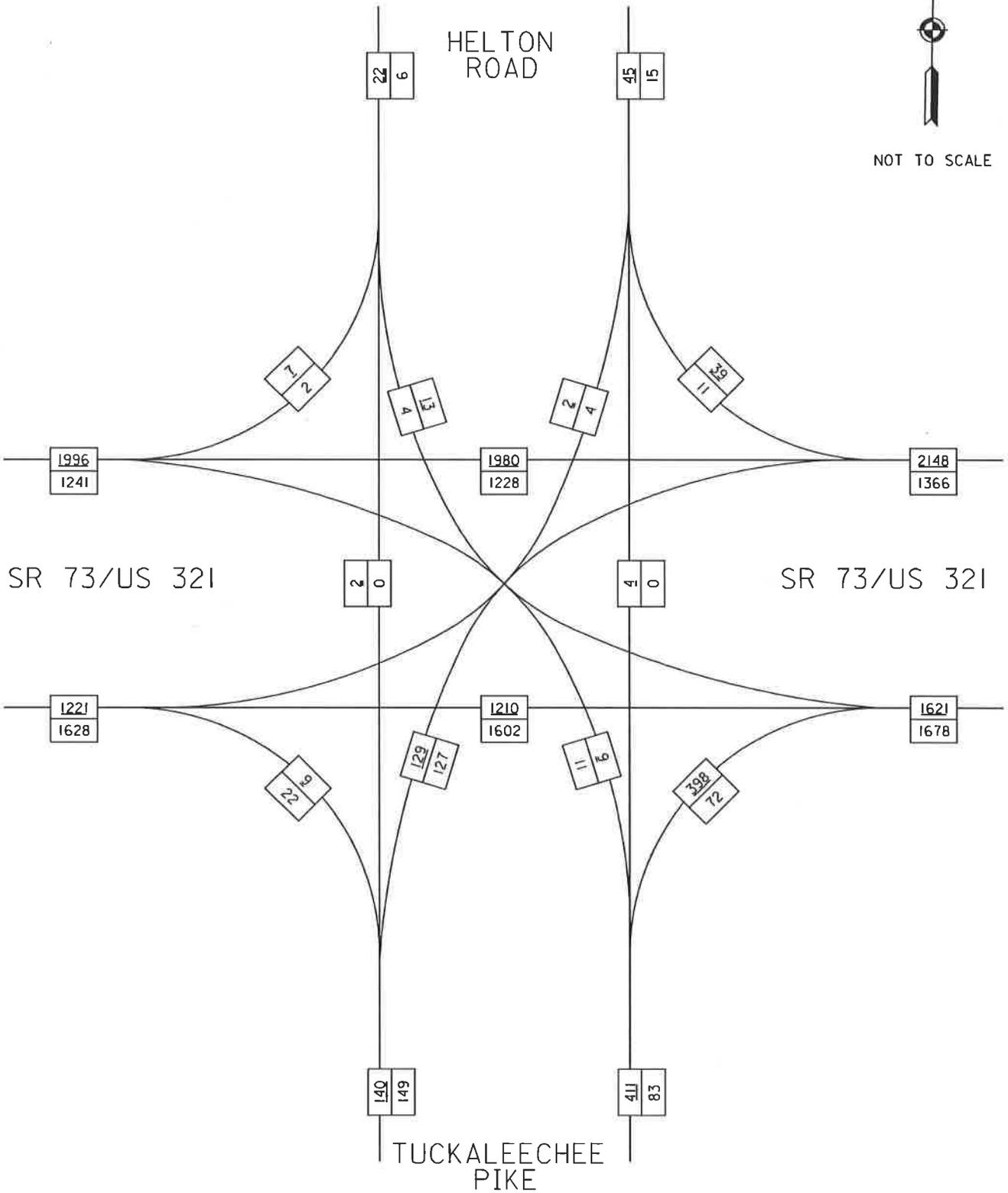


2040 DHV NO PPE
AM/PM

DAVIS FORD ROAD @
HITCH ROAD



NOT TO SCALE



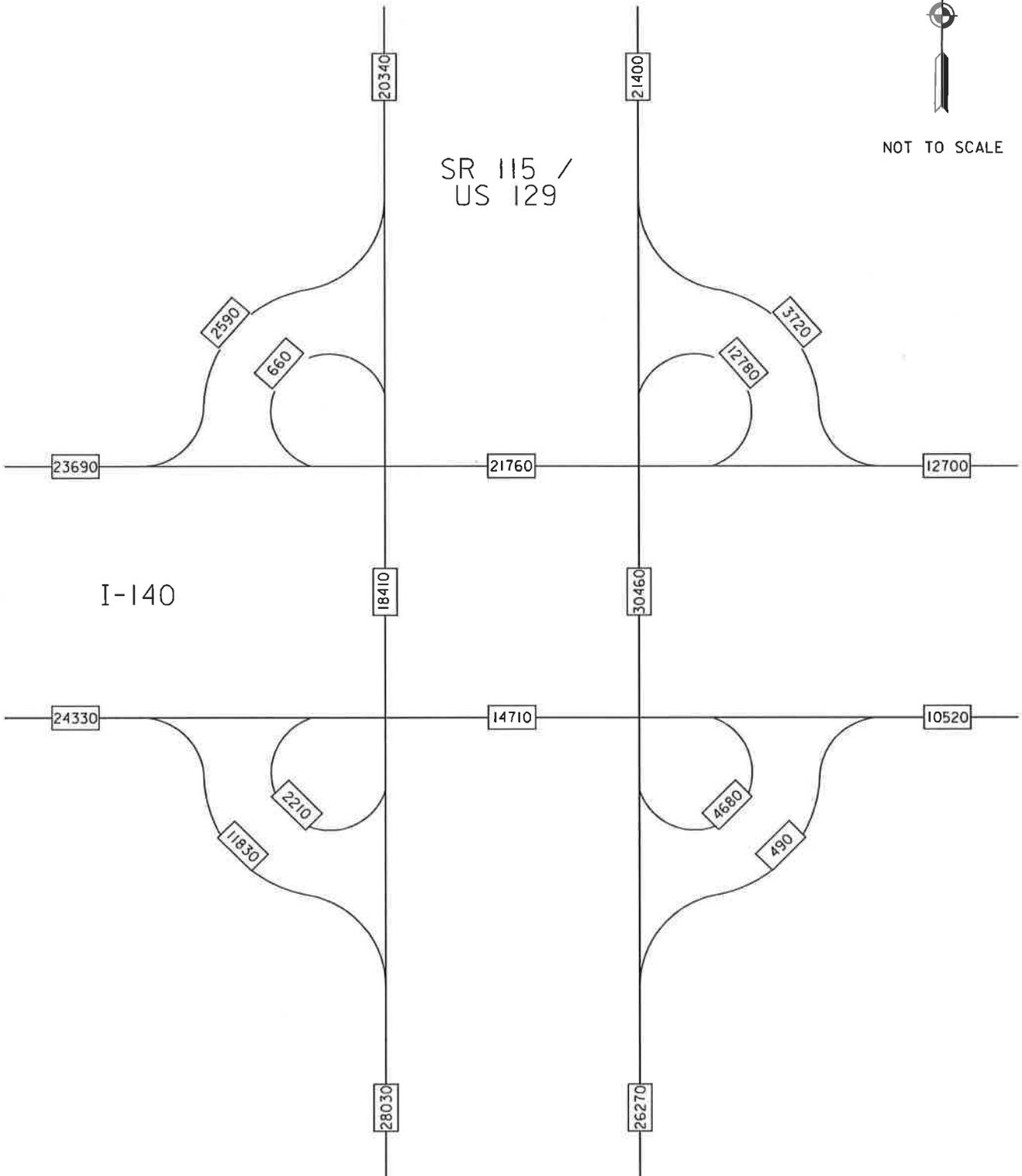
2040 DHV NO PPE
AM/PM

SR 73/US 321 @
HELTON ROAD/TUCKALEECHEE PIKE



NOT TO SCALE

SR 115 /
US 129

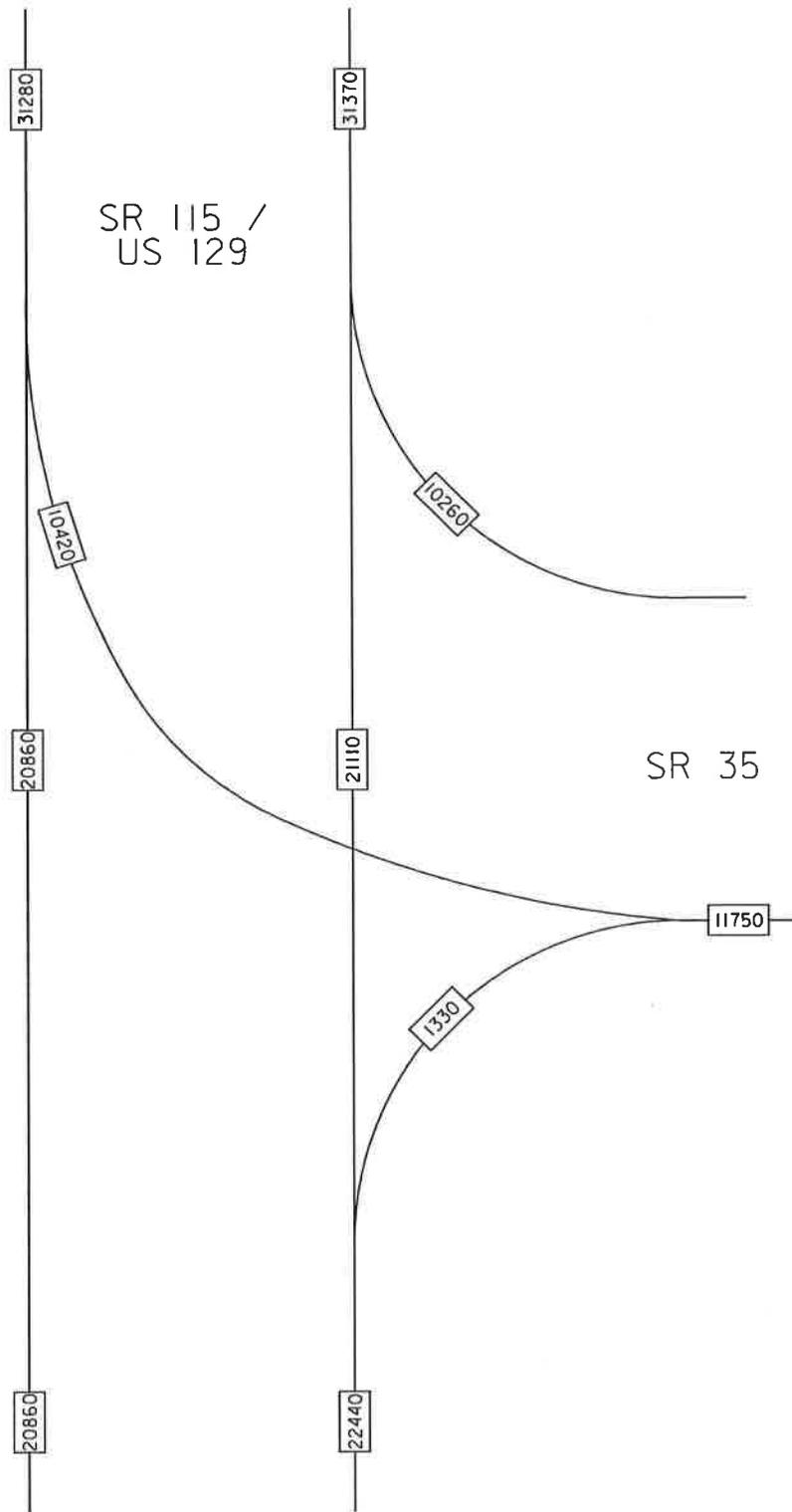


2020 AADT WITH PPE

SR 115/US 129 @
I-140 / PELLISSIPPI PARKWAY



NOT TO SCALE



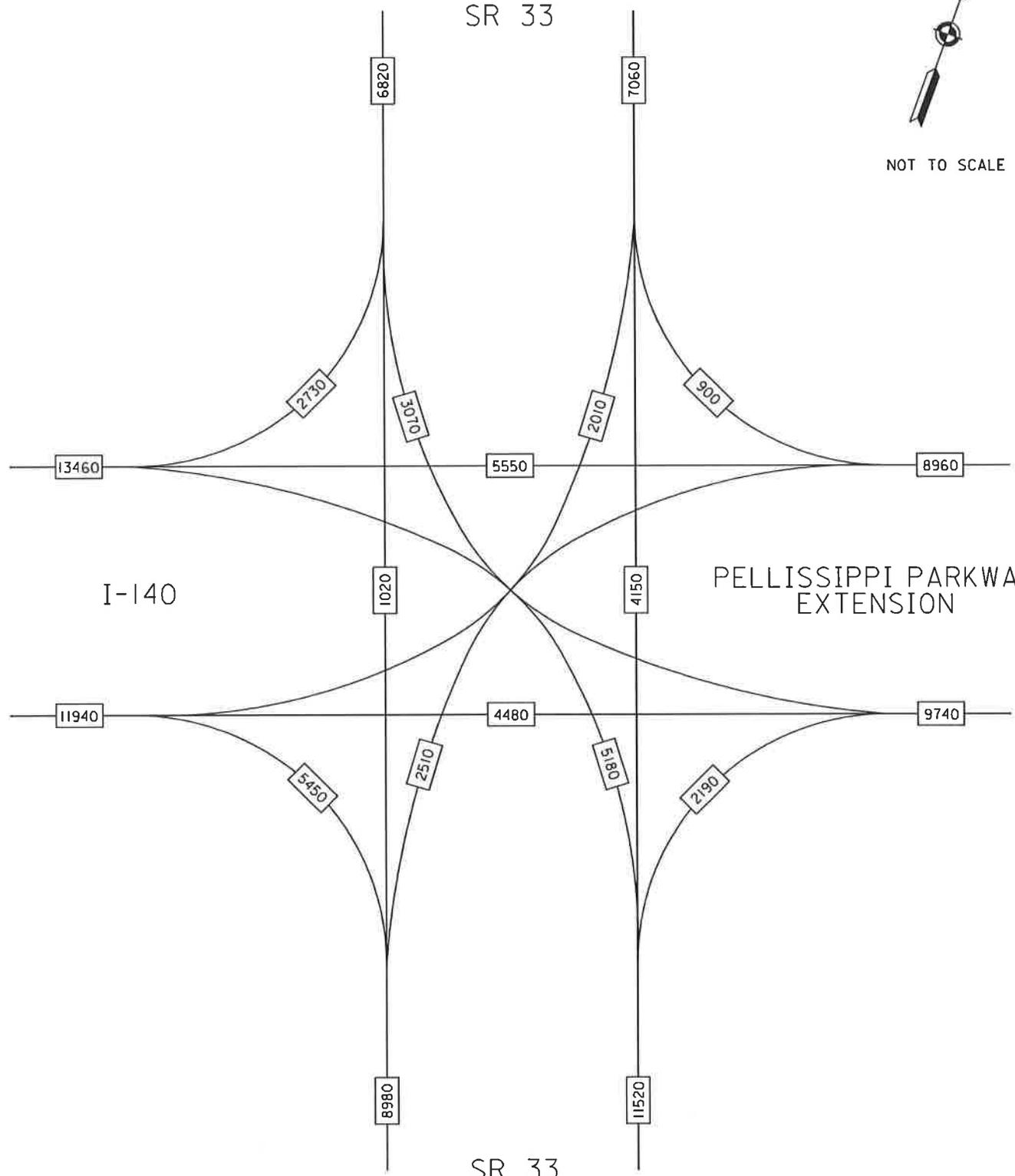
2020 AADT WITH PPE

SR 115/US 129 @ SR 35

SR 33



NOT TO SCALE

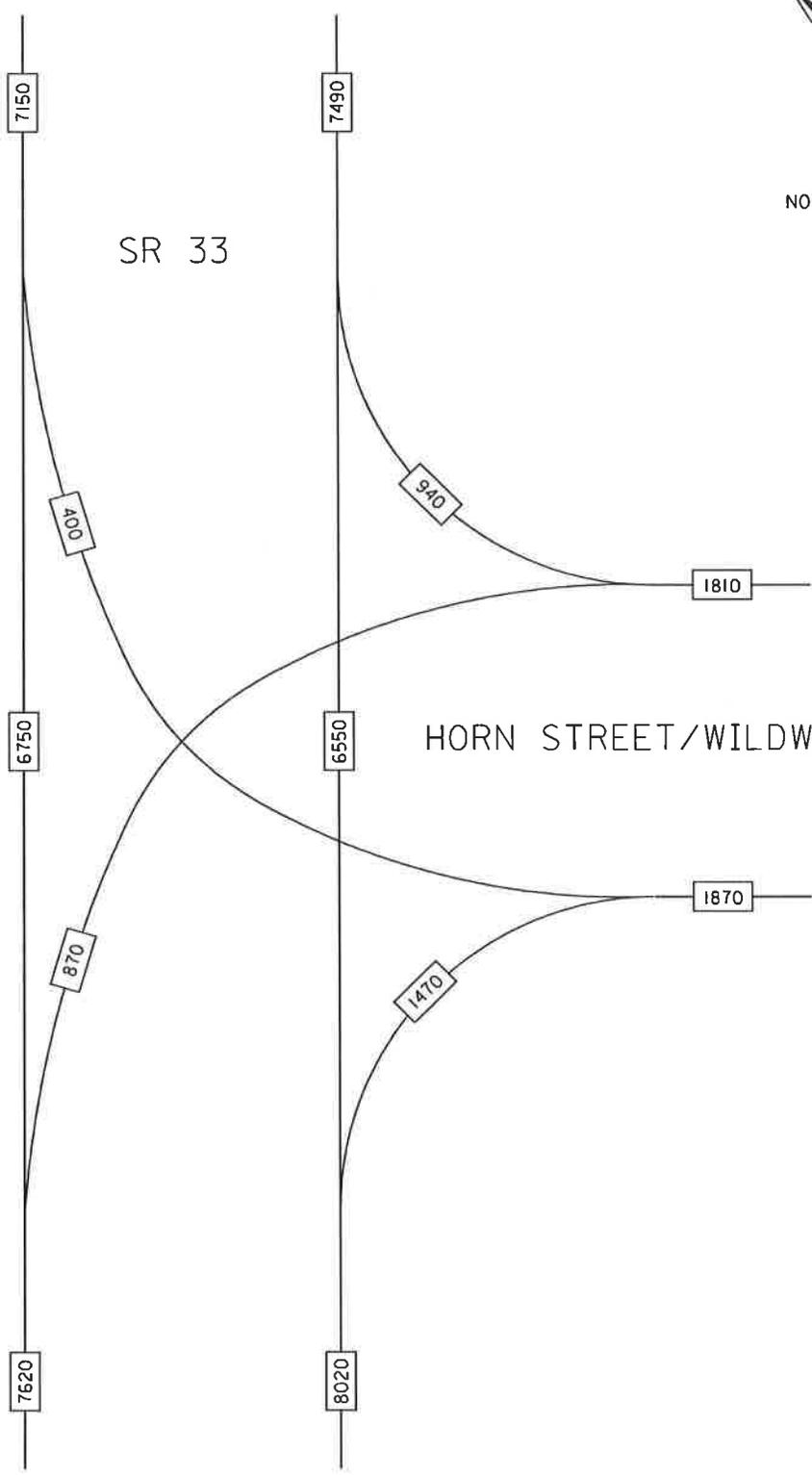


2020 AADT WITH PPE

SR 33 @
I-140 / PELLISSIPPI PKWY EXTENSION



NOT TO SCALE

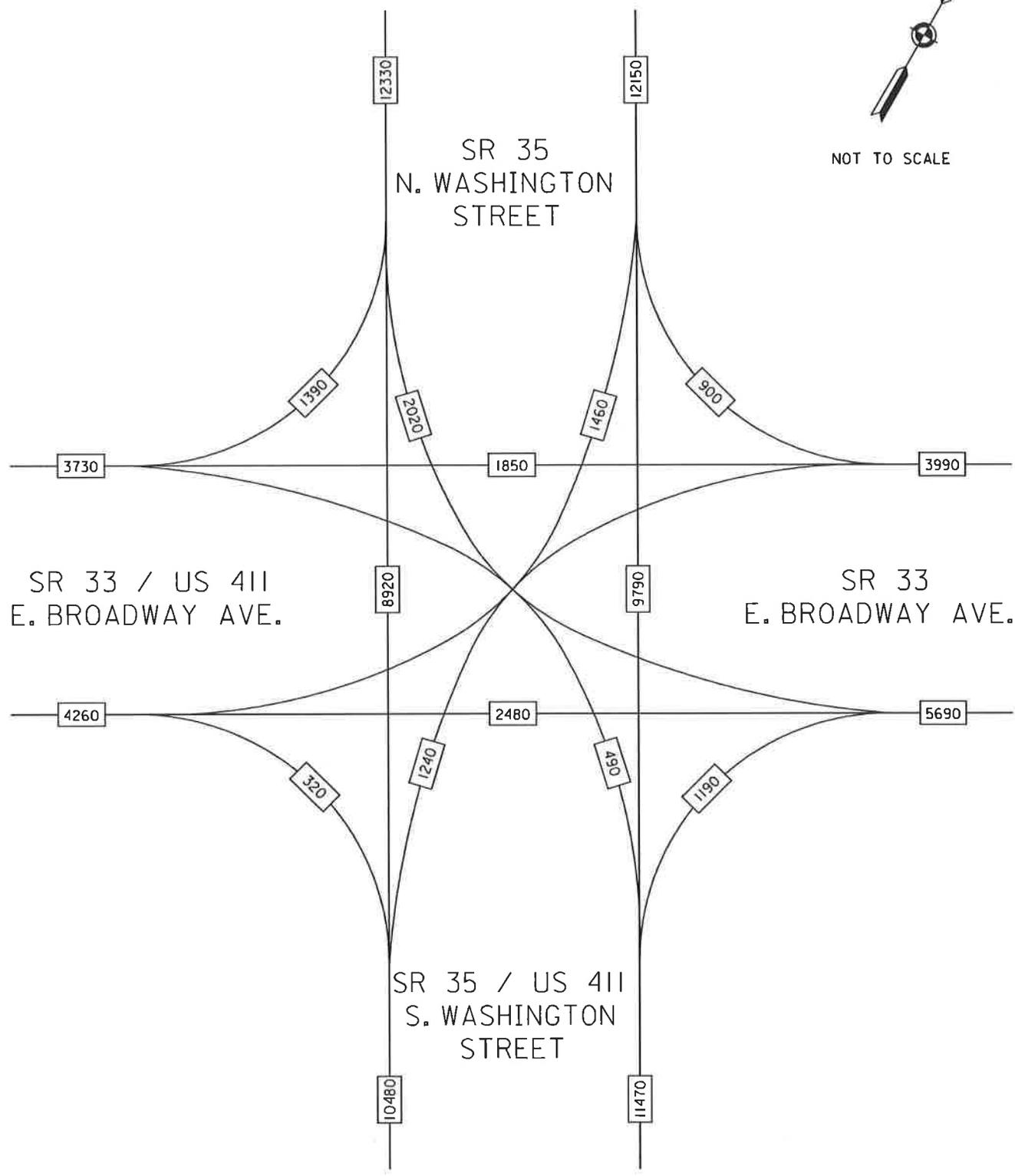


2020 AADT WITH PPE

SR 33 @ HORN STREET/
WILDWOOD ROAD



NOT TO SCALE



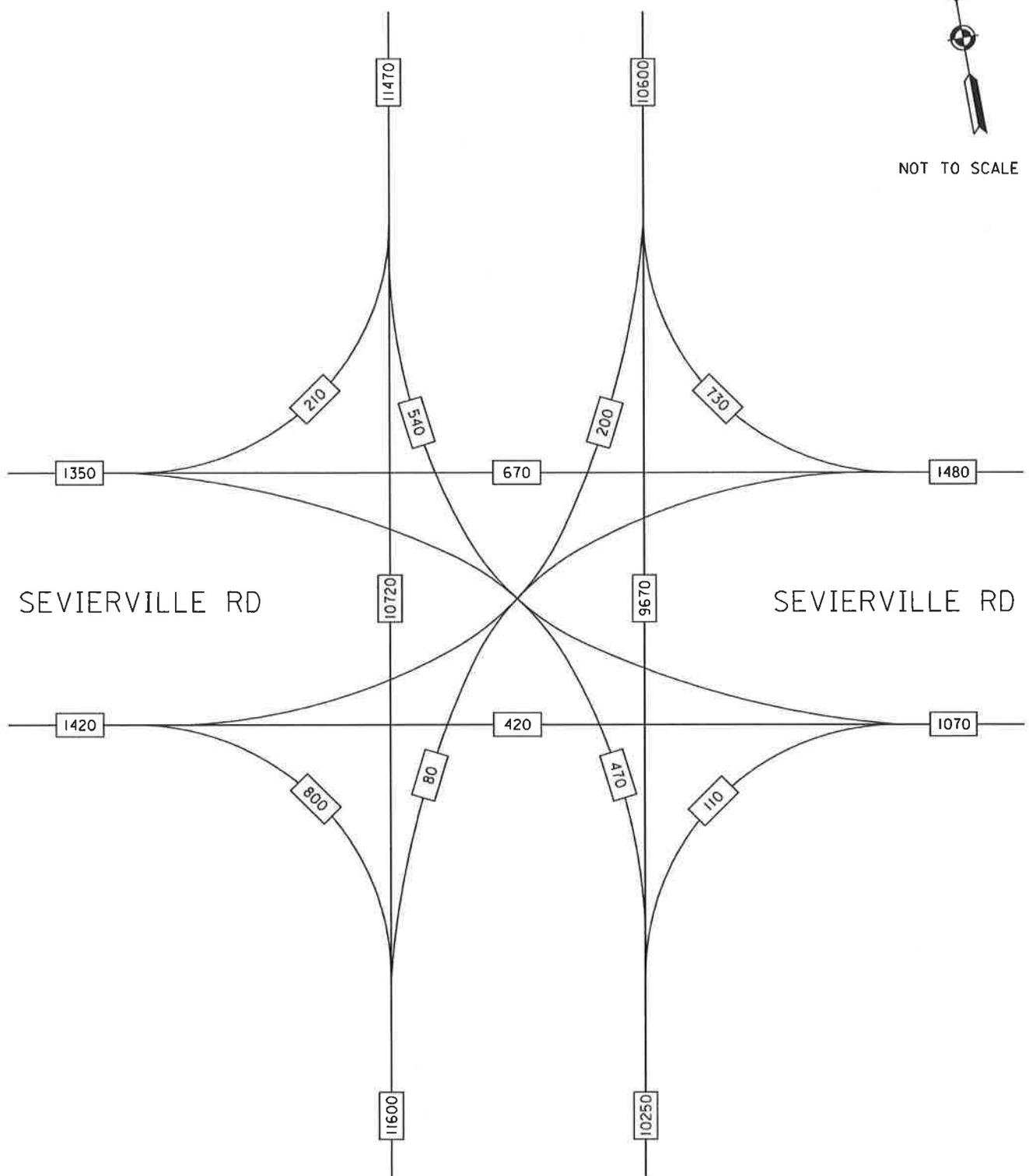
2020 AADT WITH PPE

SR 33 @ SR 35

SR 35/N. WASHINGTON ST



NOT TO SCALE



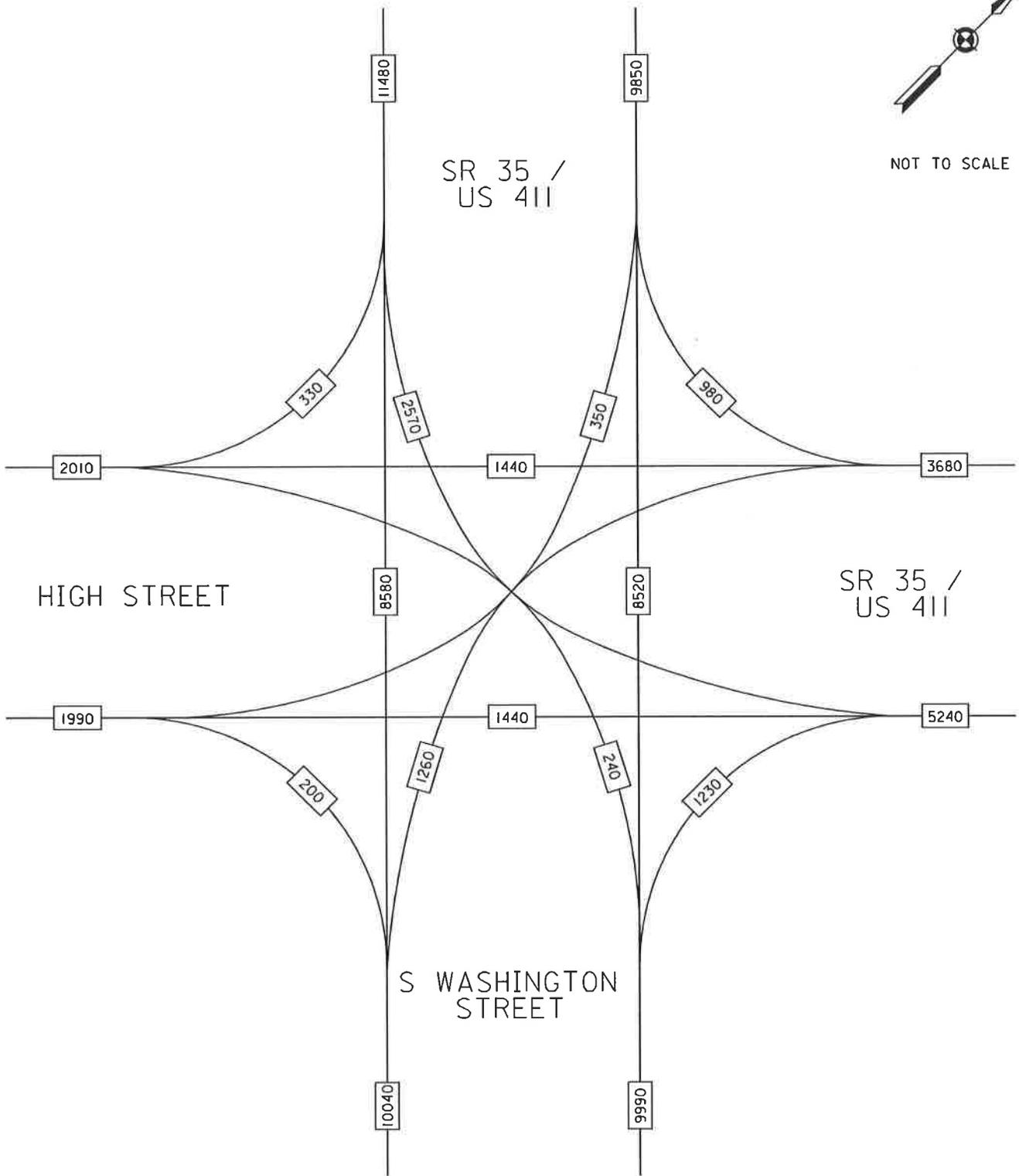
SR 35/US 411 S. WASHINGTON ST

2020 AADT WITH PPE

SEVIERVILLE RD @
SR 35/US 411 WASHINGTON ST



NOT TO SCALE

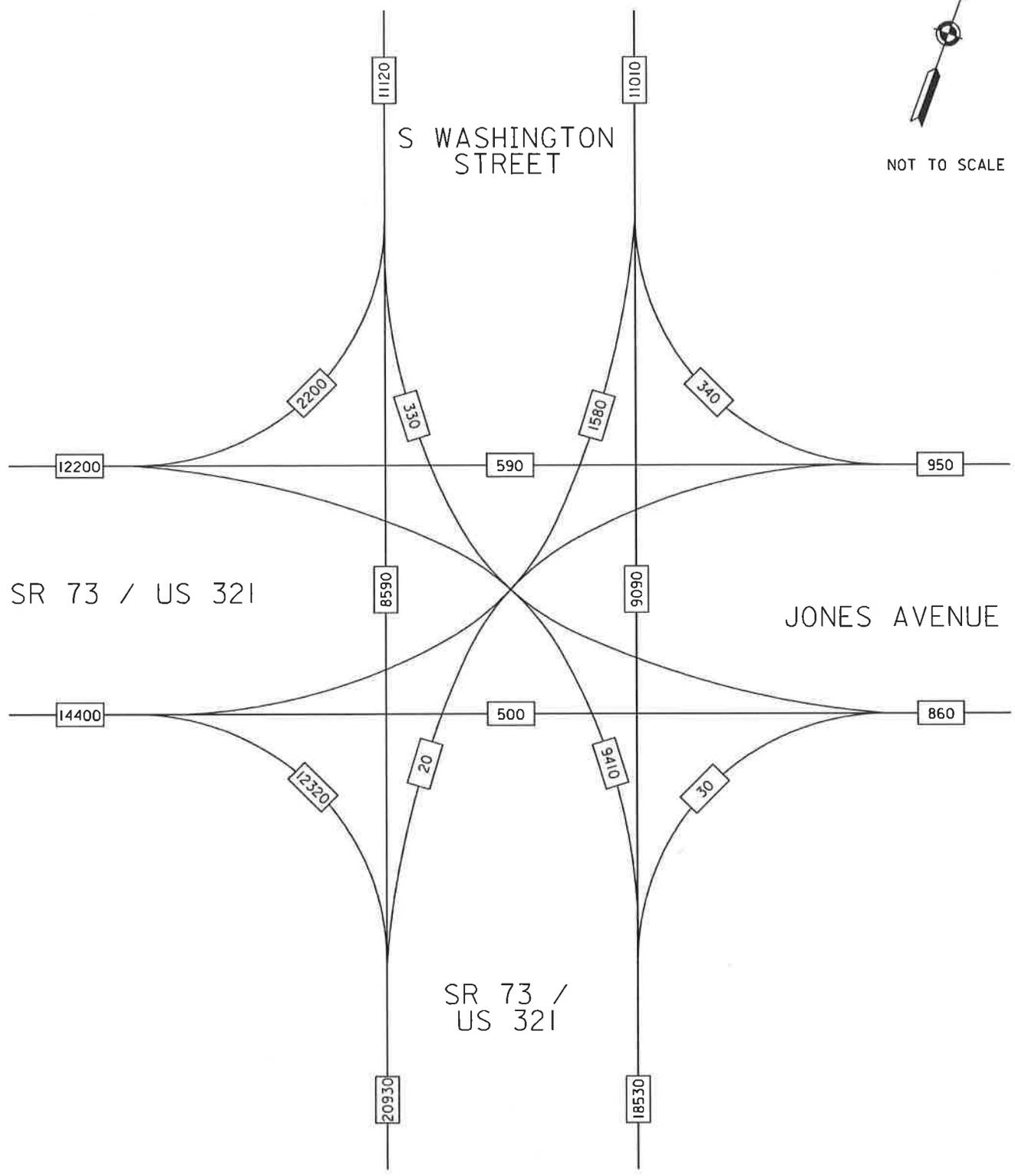


2020 AADT WITH PPE

S WASHINGTON ST / SR 35
@ HIGH ST / SR 35



NOT TO SCALE



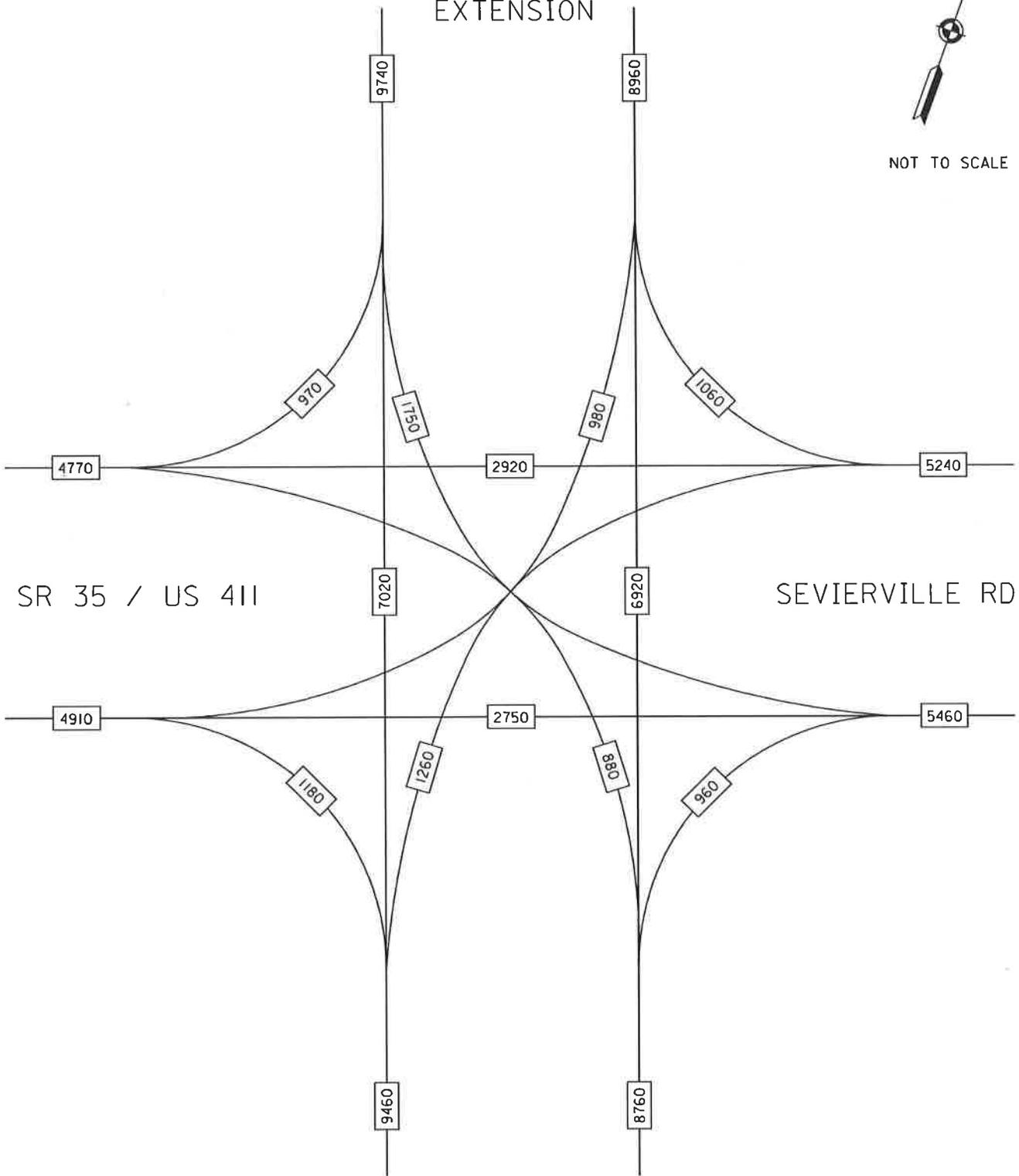
2020 AADT WITH PPE

S WASHINGTON ST
@ SR 73 / US 321

PELLISSIPPI PARKWAY
EXTENSION



NOT TO SCALE



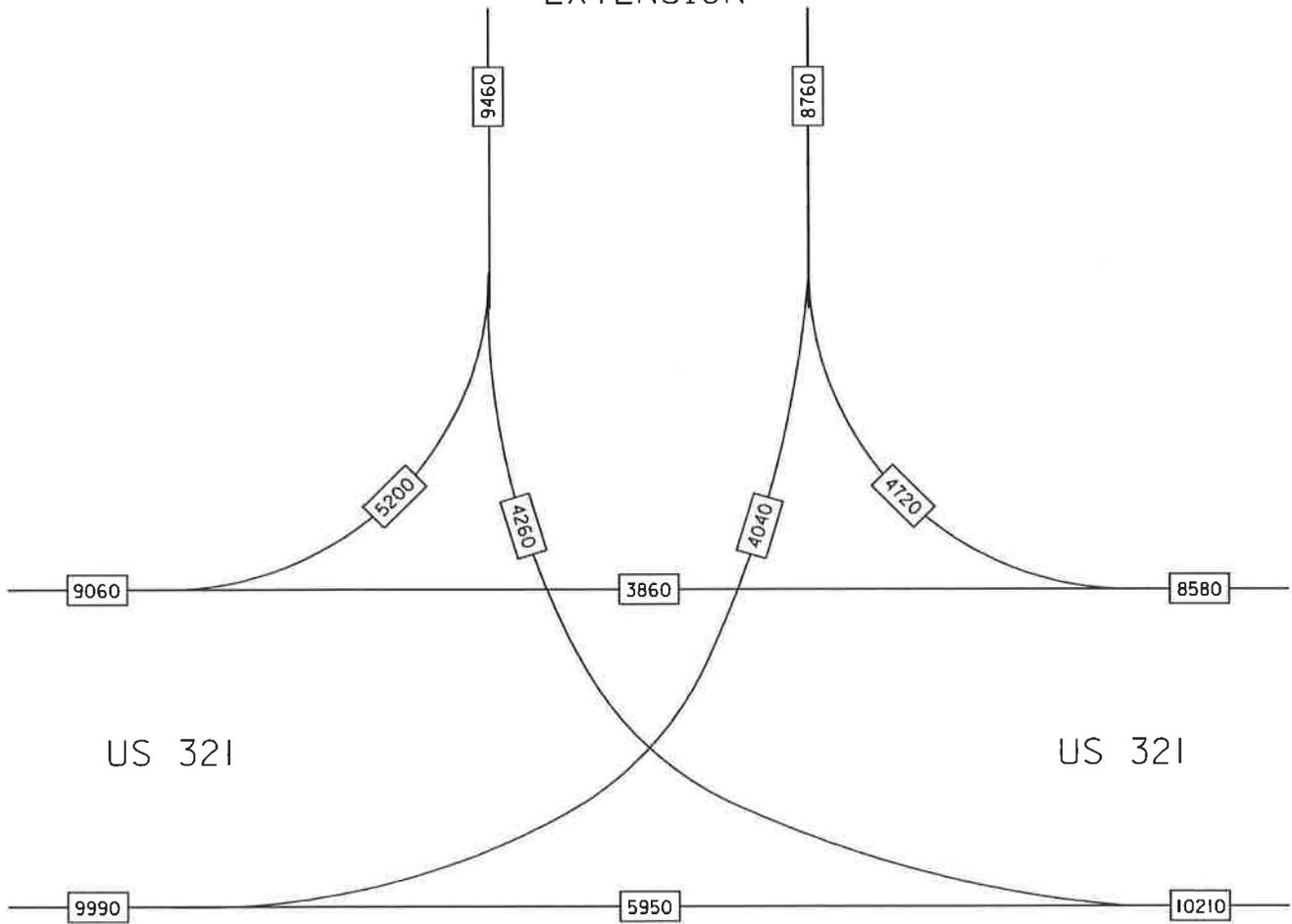
2020 AADT WITH PPE

PELLISSIPPI PKWY EXTENSION @
SR 35 / US 411 / SEVIERVILLE RD



NOT TO SCALE

PELLISSIPPI PARKWAY EXTENSION

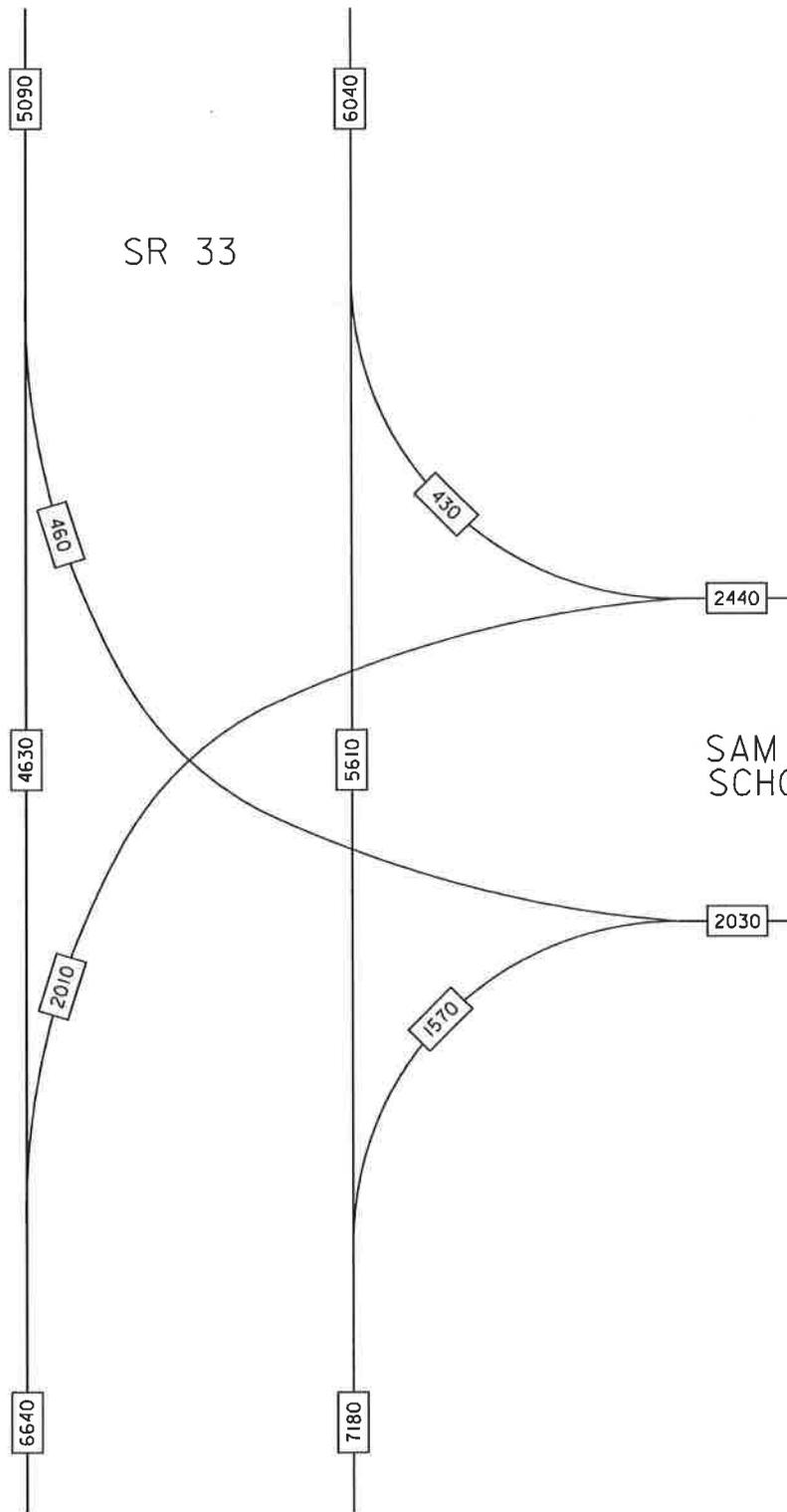


2020 AADT WITH PPE

PELLISSIPPI PKWY EXTENSION @
US 321



NOT TO SCALE



SR 33

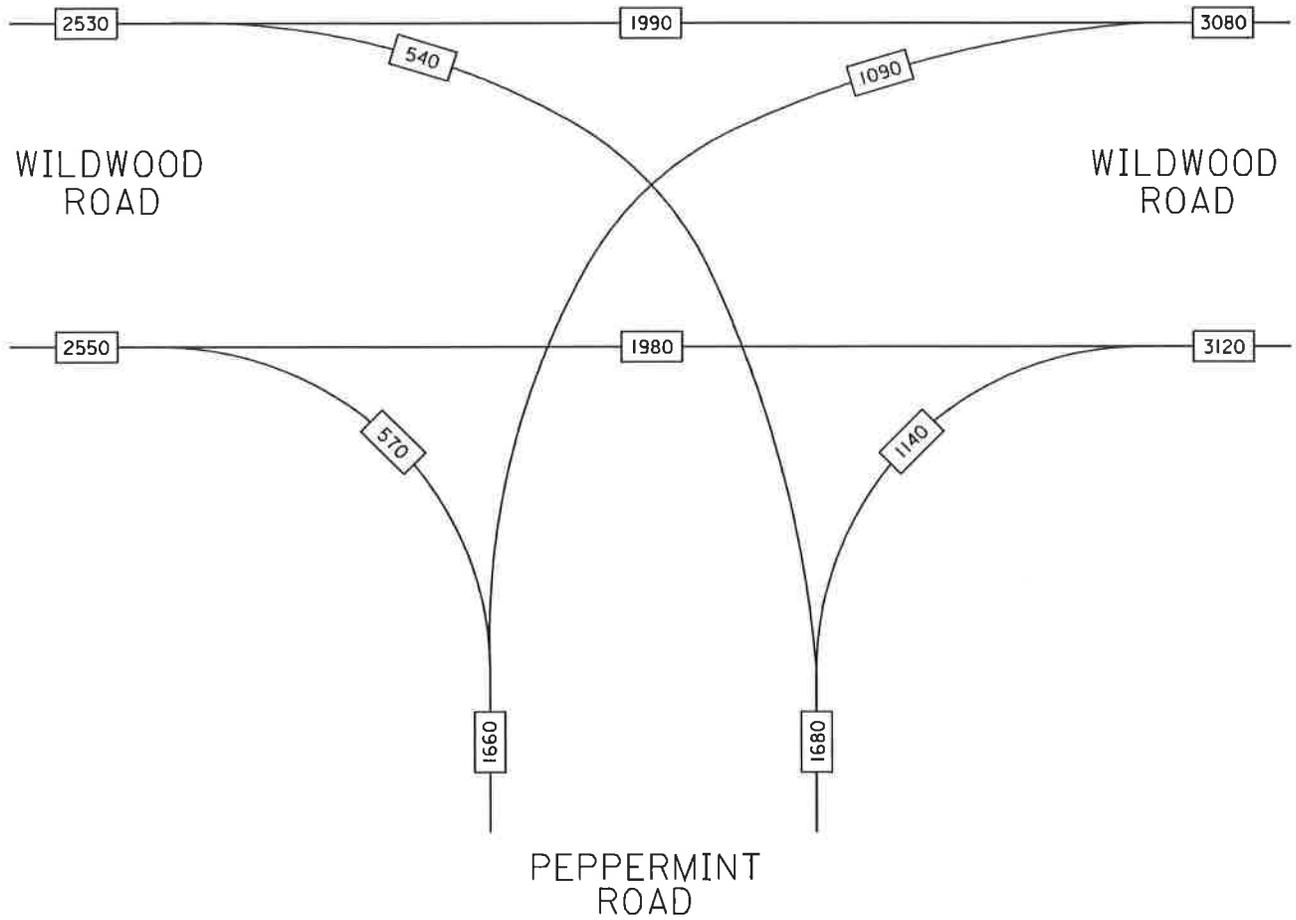
SAM HOUSTON
SCHOOL ROAD

2020 AADT WITH PPE

SR 33 @
SAM HOUSTON SCHOOL ROAD



NOT TO SCALE

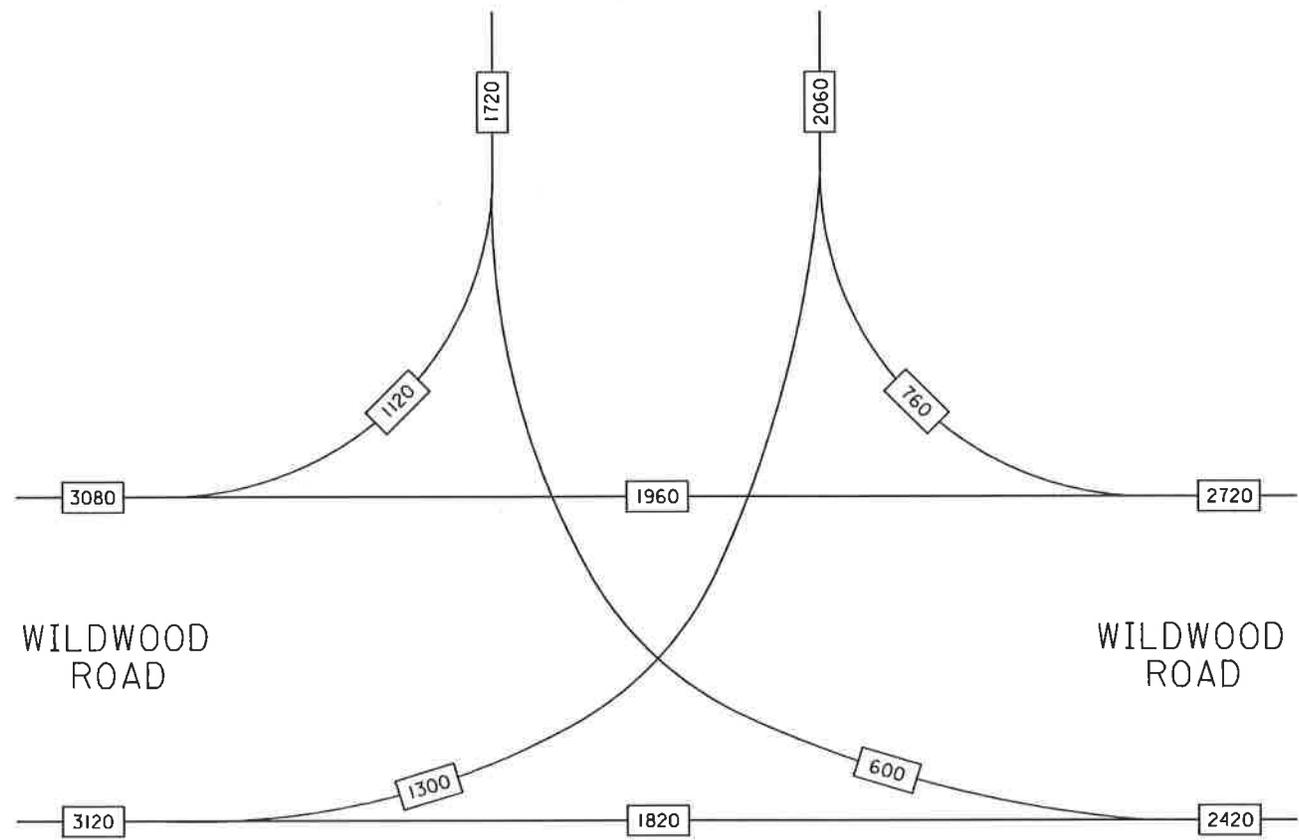


2020 AADT WITH PPE	PEPPERMINT ROAD @ WILDWOOD ROAD
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NOT TO SCALE

SAM HOUSTON SCHOOL ROAD



WILDWOOD ROAD

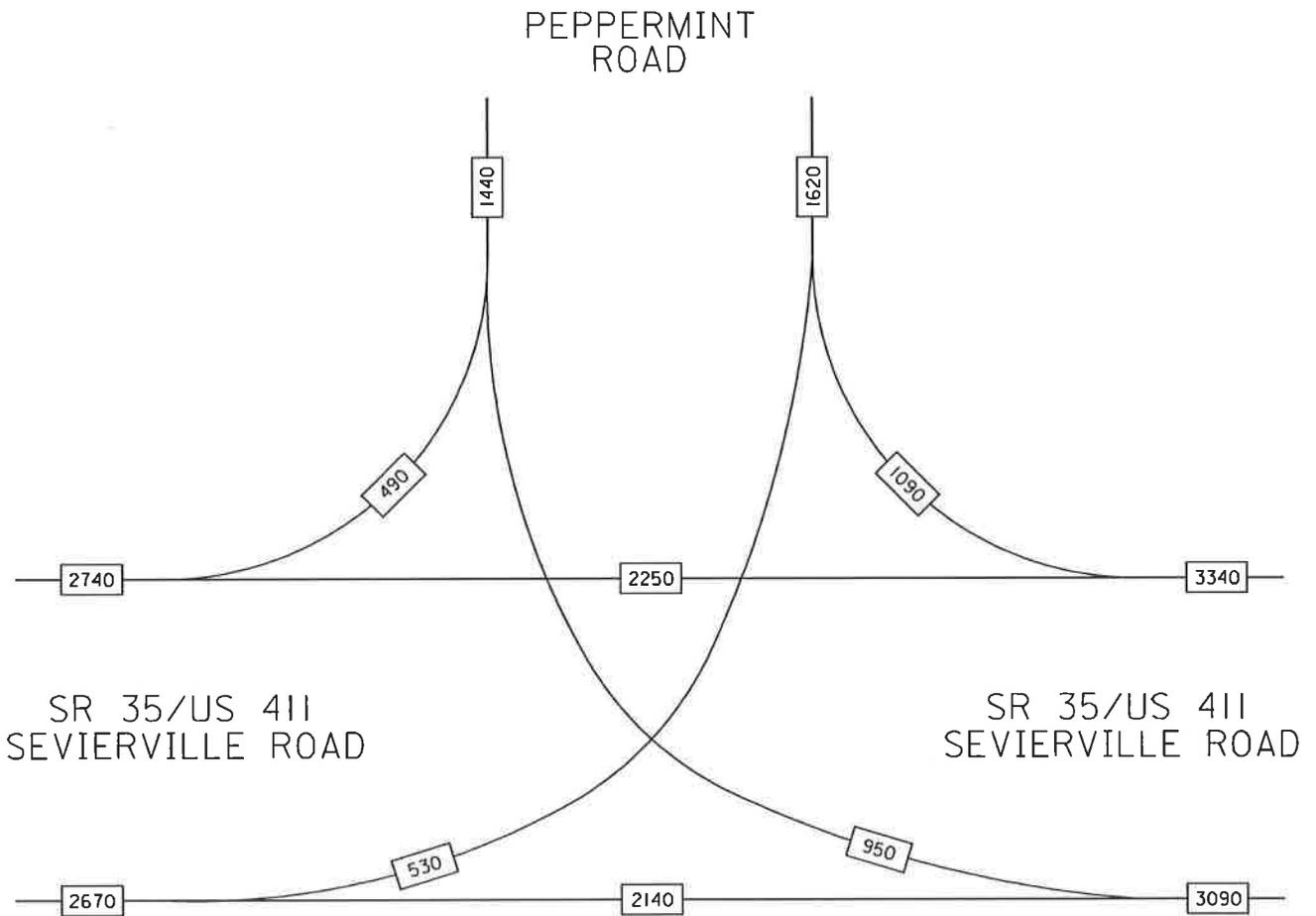
WILDWOOD ROAD

2020 AADT WITH PPE

SAM HOUSTON SCHOOL ROAD @ WILDWOOD ROAD



NOT TO SCALE



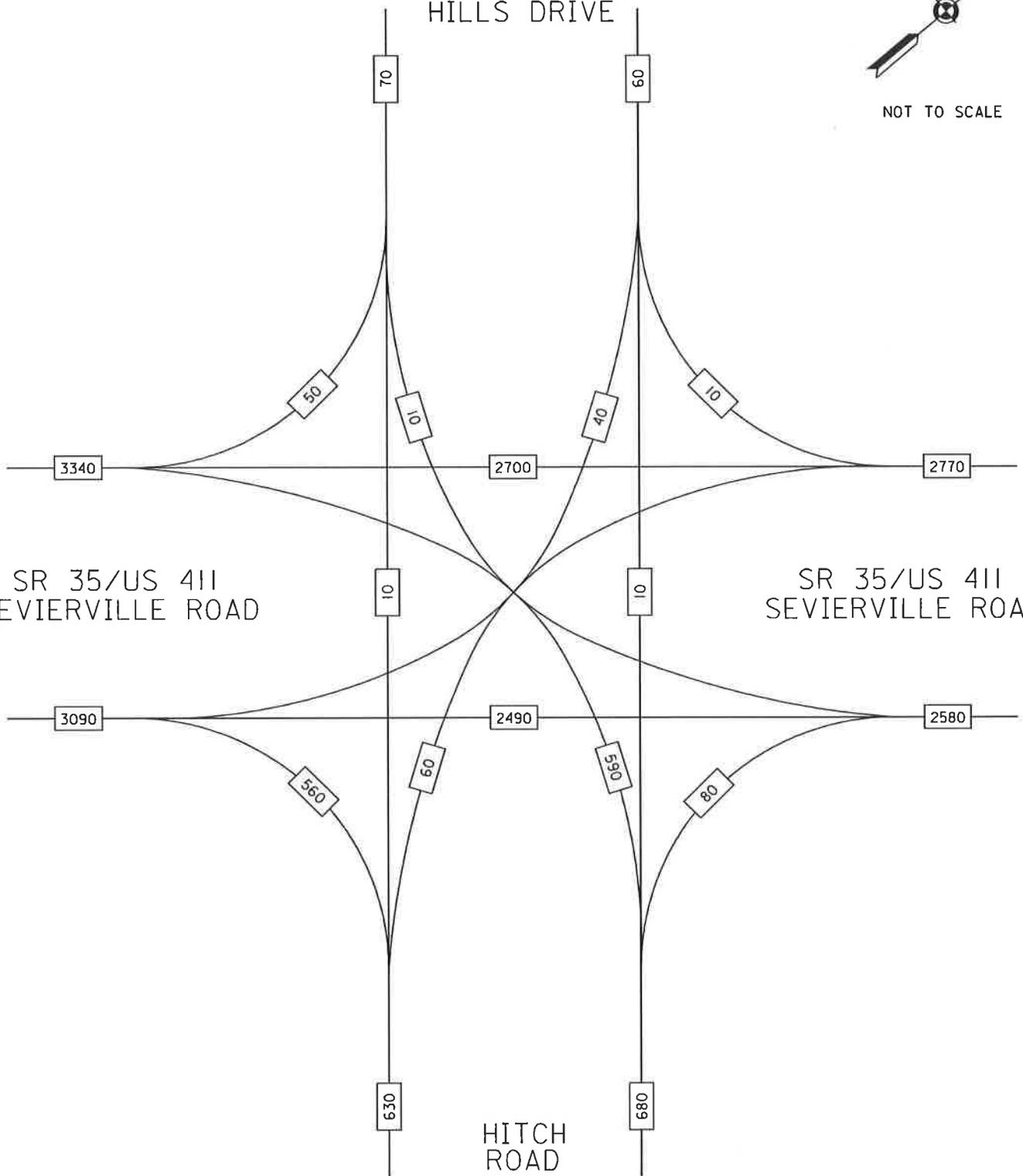
2020 AADT WITH PPE

SR 35/US 411/SEVIERVILLE ROAD @
PEPPERMINT ROAD

PEPPERMINT
HILLS DRIVE



NOT TO SCALE

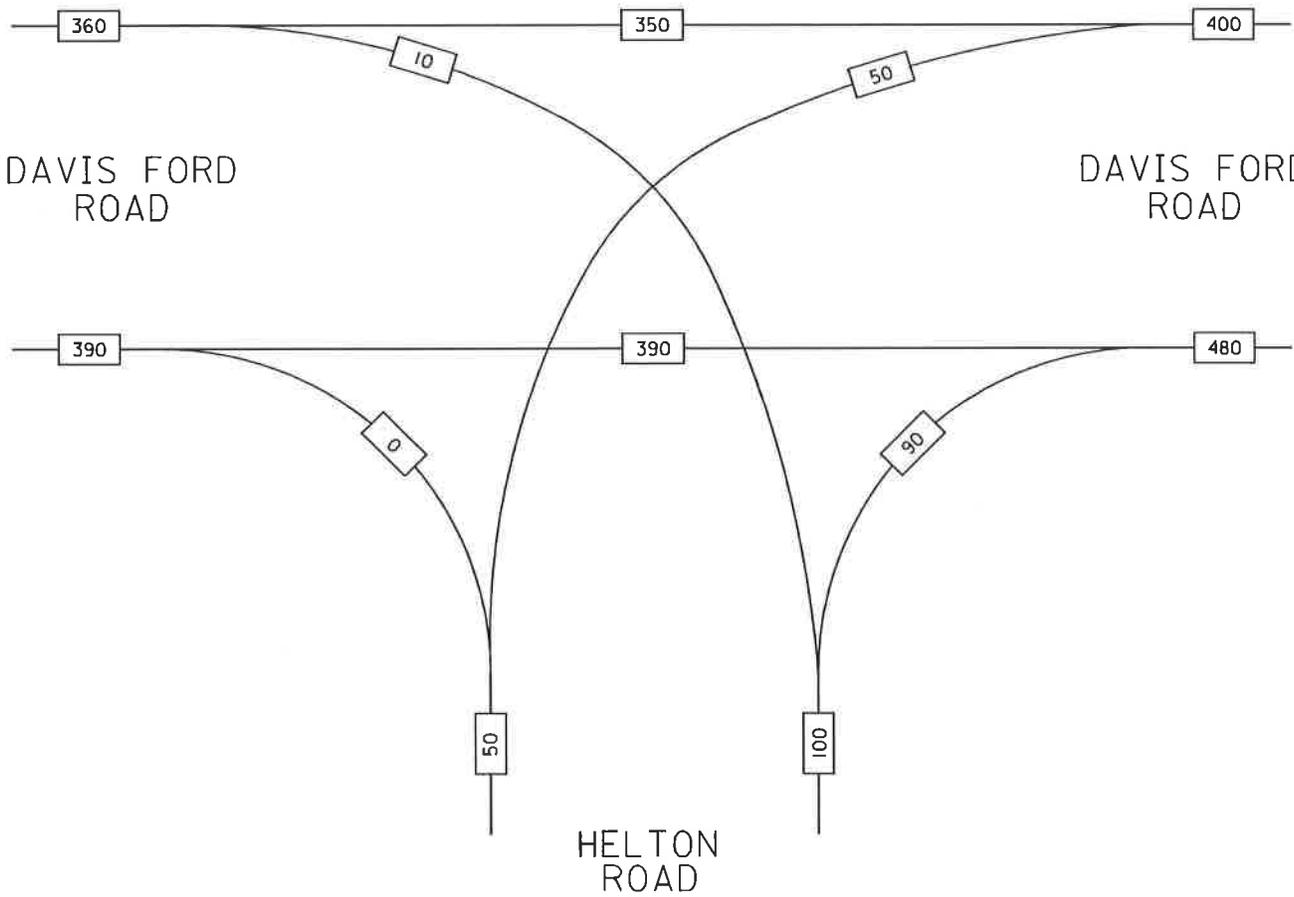


2020 AADT WITH PPE

SR 35/US 411/SEVIERVILLE ROAD @
HITCH ROAD/PEPPERMINT HILLS DR



NOT TO SCALE

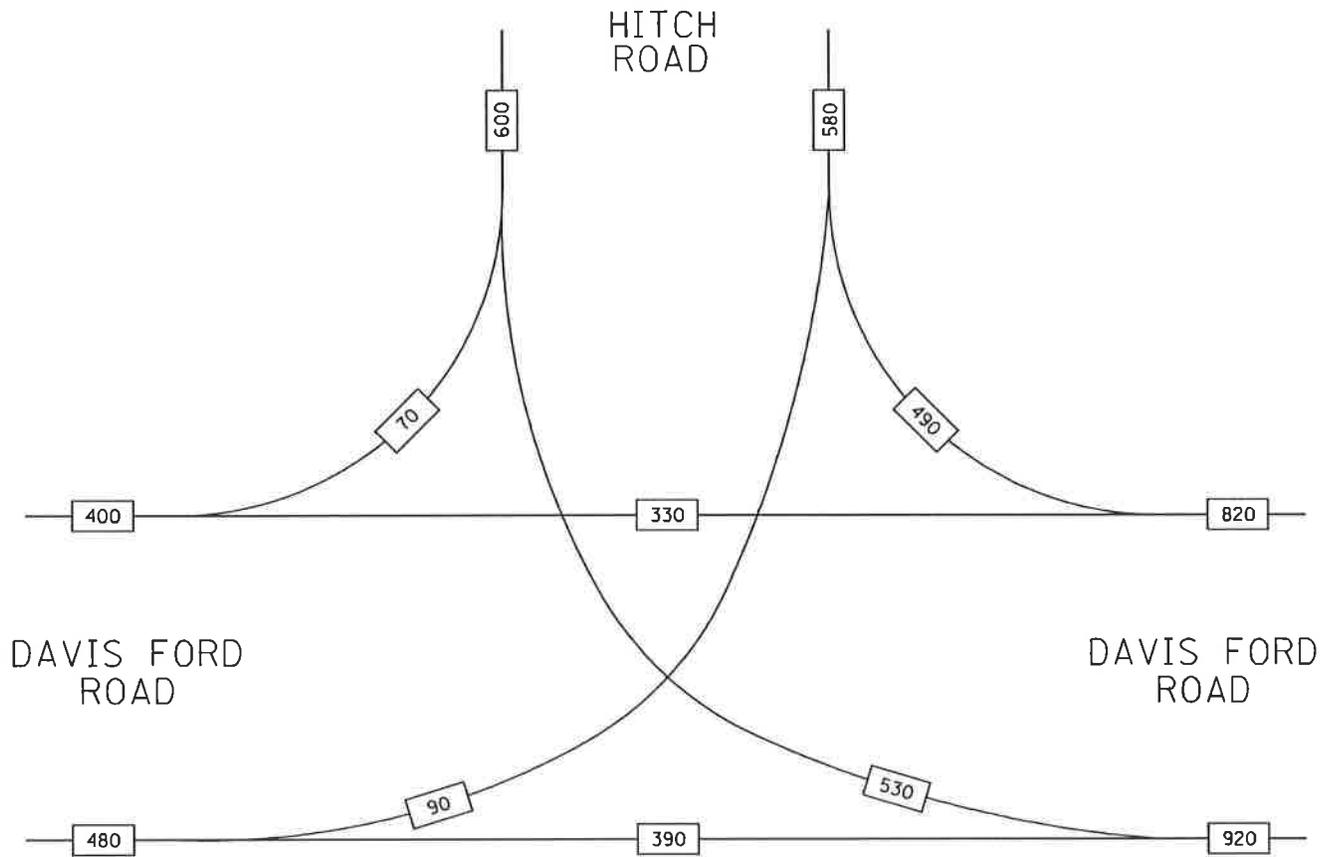


2020 AADT WITH PPE

DAVIS FORD ROAD @
HELTON ROAD



NOT TO SCALE

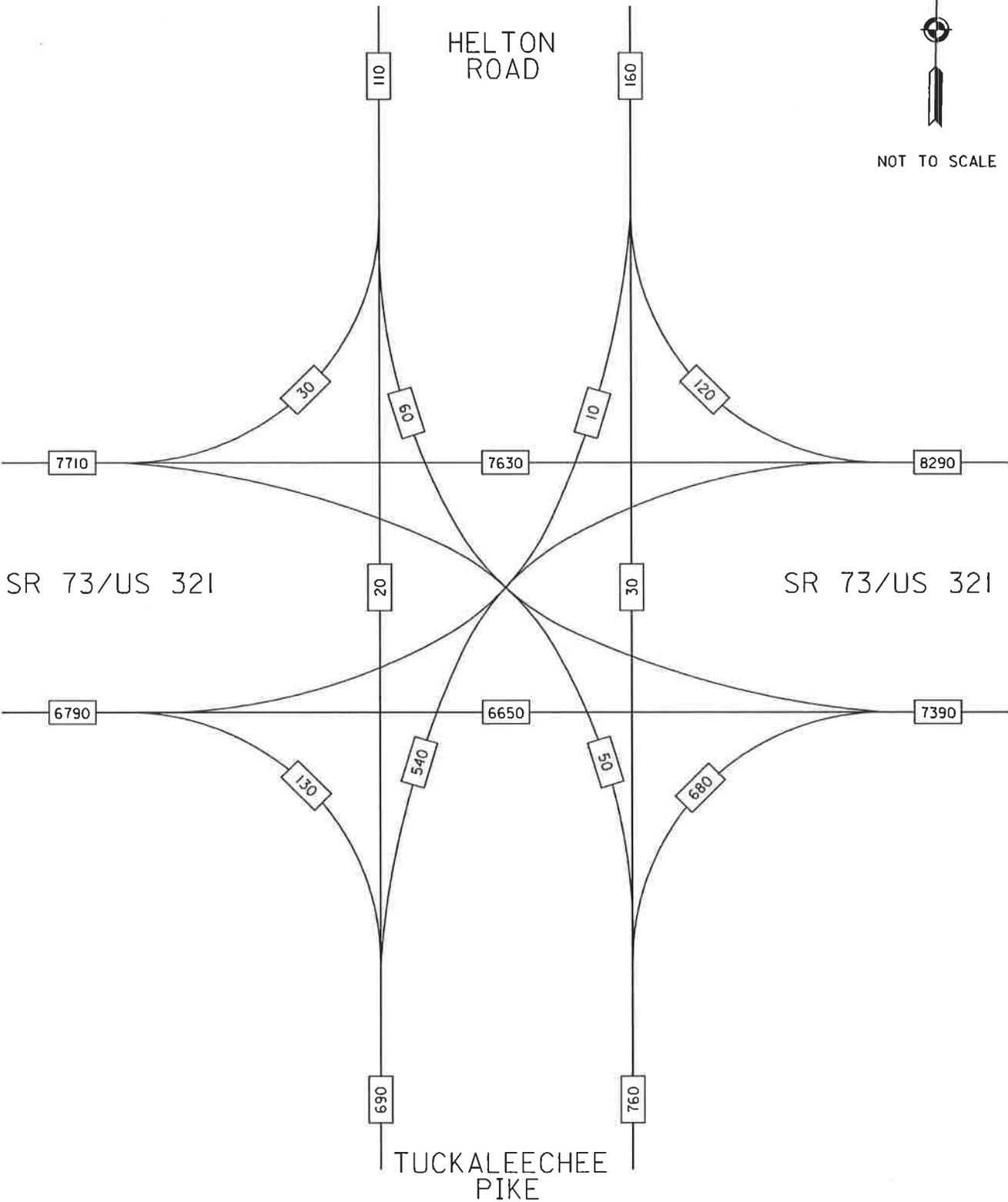


2020 AADT WITH PPE

DAVIS FORD ROAD @
HITCH ROAD



NOT TO SCALE



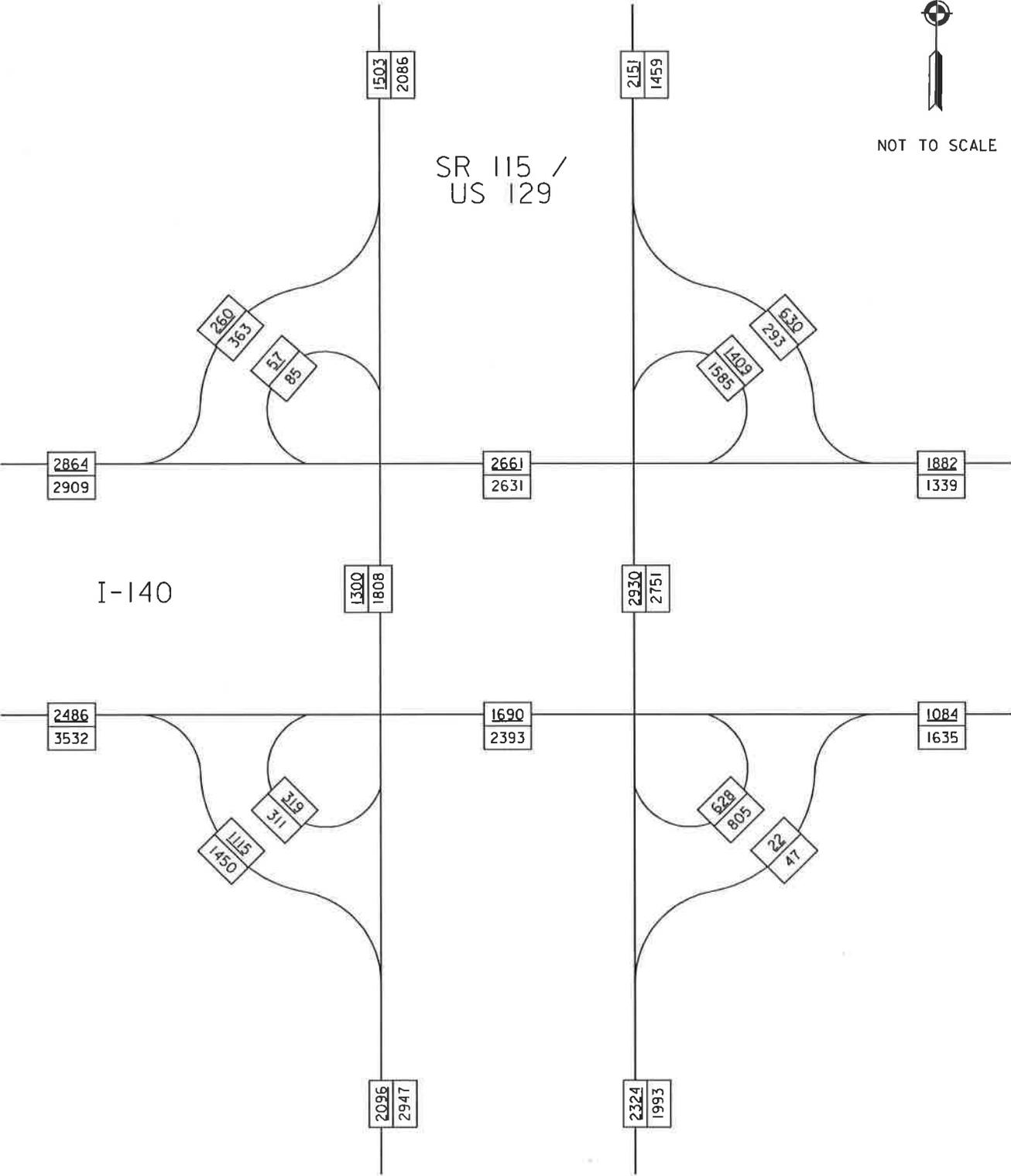
2020 AADT WITH PPE

SR 73/US 321 @
HELTON ROAD/TUCKALEECHEE PIKE



NOT TO SCALE

SR 115 /
US 129

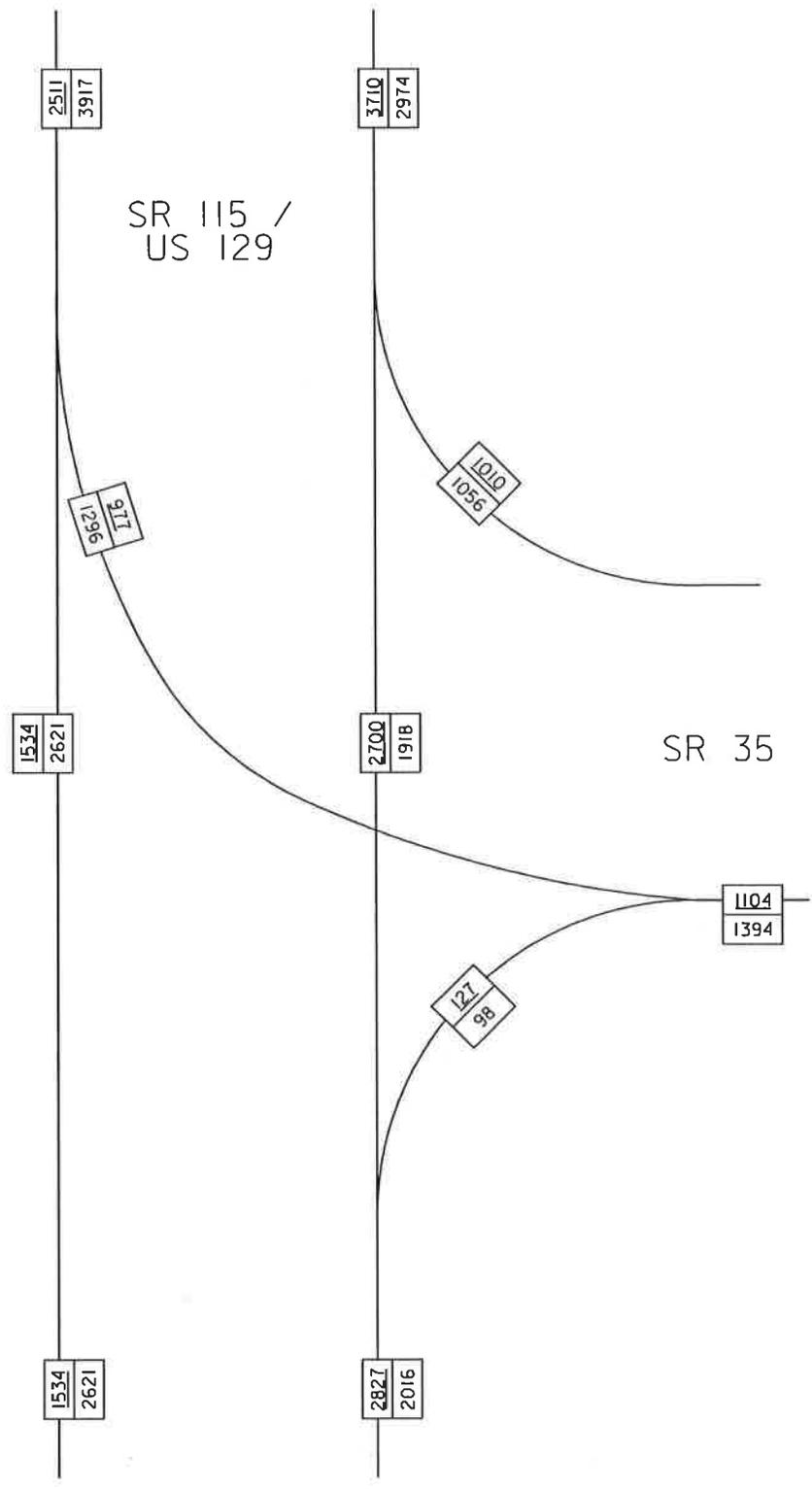


2020 DHV WITH PPE
AM / PM

SR 115/US 129 @
I-140 / PELLISSIPPI PARKWAY



NOT TO SCALE

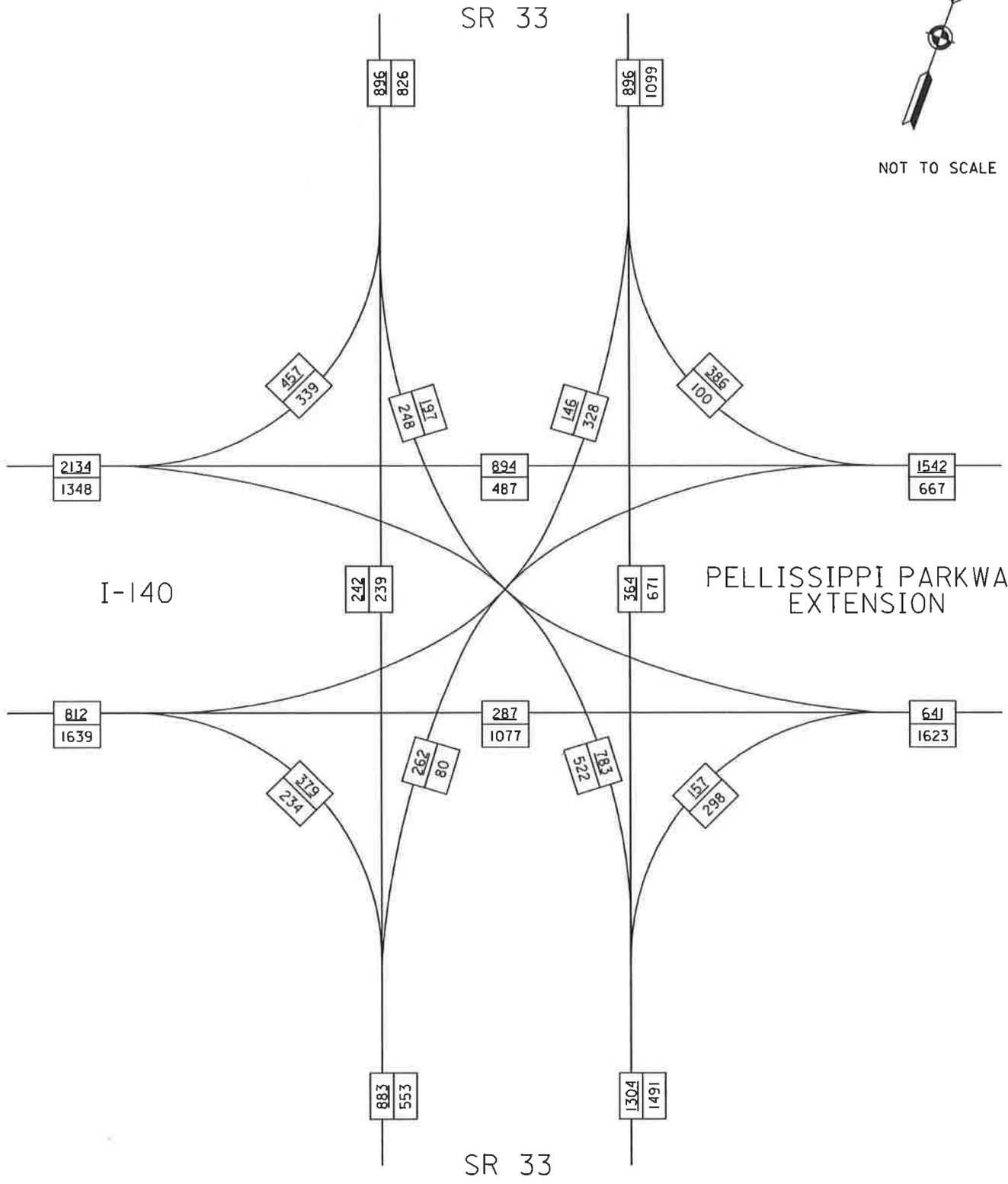


2020 DHV WITH PPE
AM / PM

SR 115/US 129 @ SR 35



NOT TO SCALE

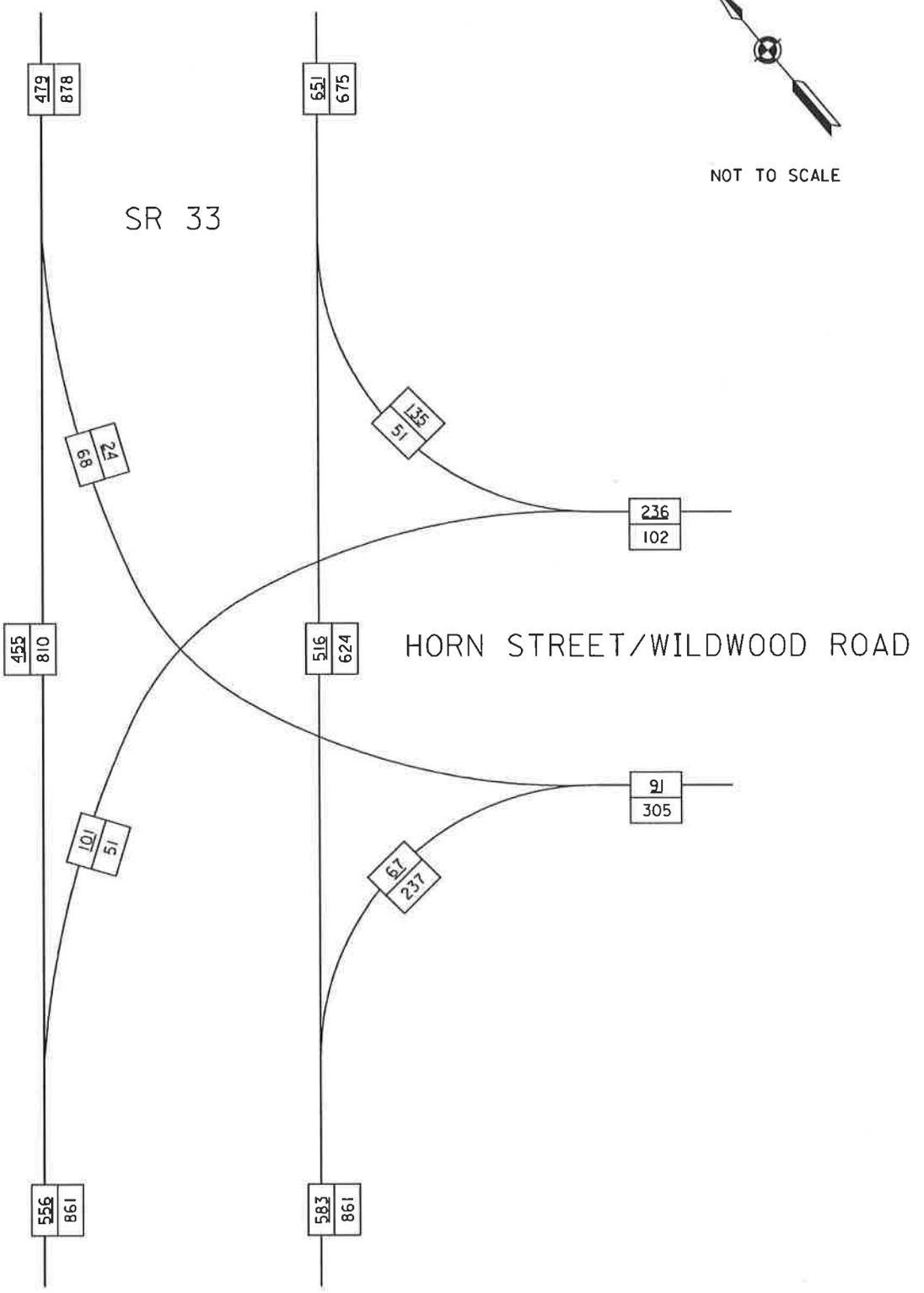


2020 DHV WITH PPE
AM / PM

SR 33 @
I-140 / PELLISSIPPI PKWY EXTENSION



NOT TO SCALE

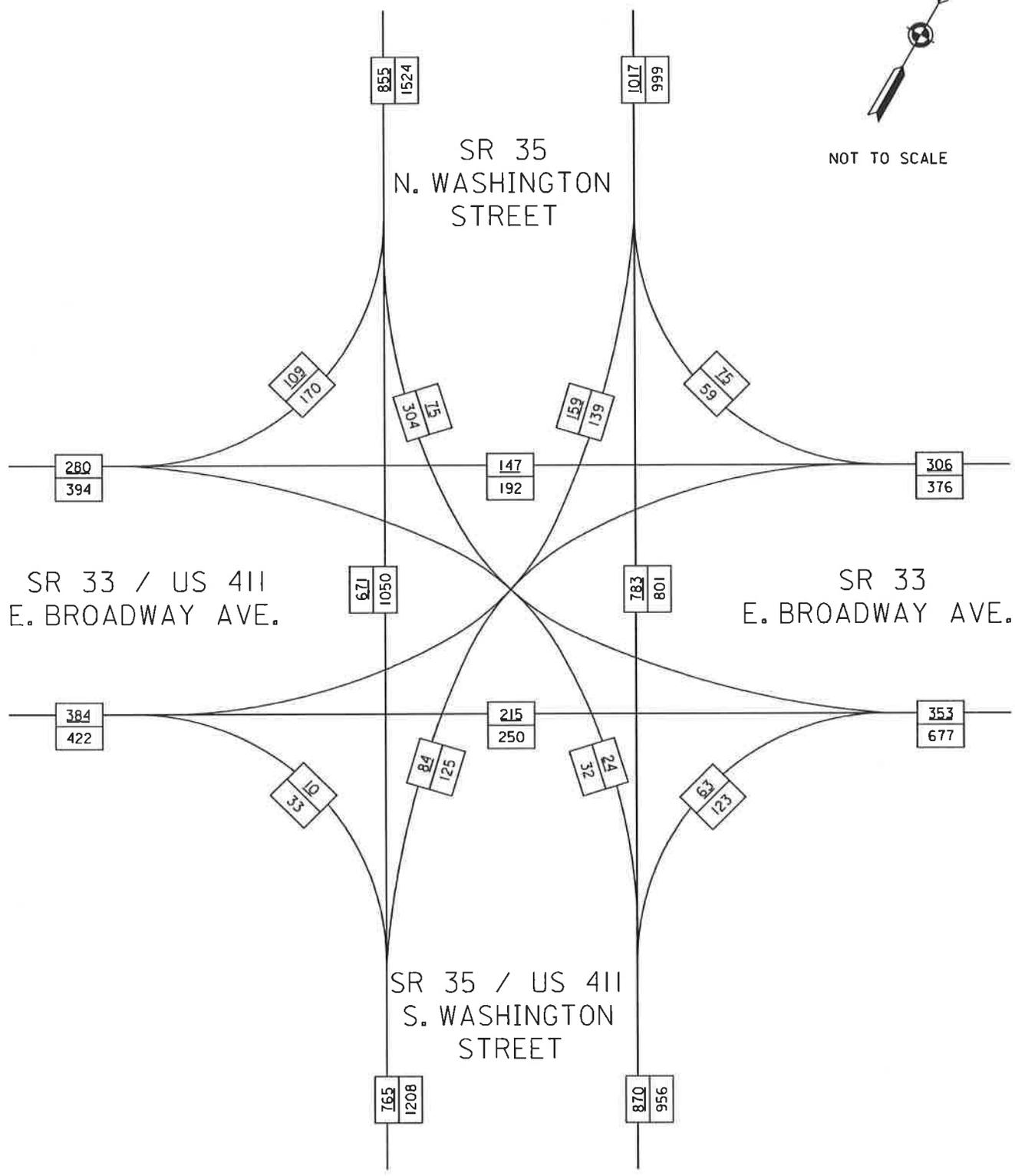


2020 DHV WITH PPE
AM / PM

SR 33 @ HORN STREET/
WILDWOOD ROAD



NOT TO SCALE



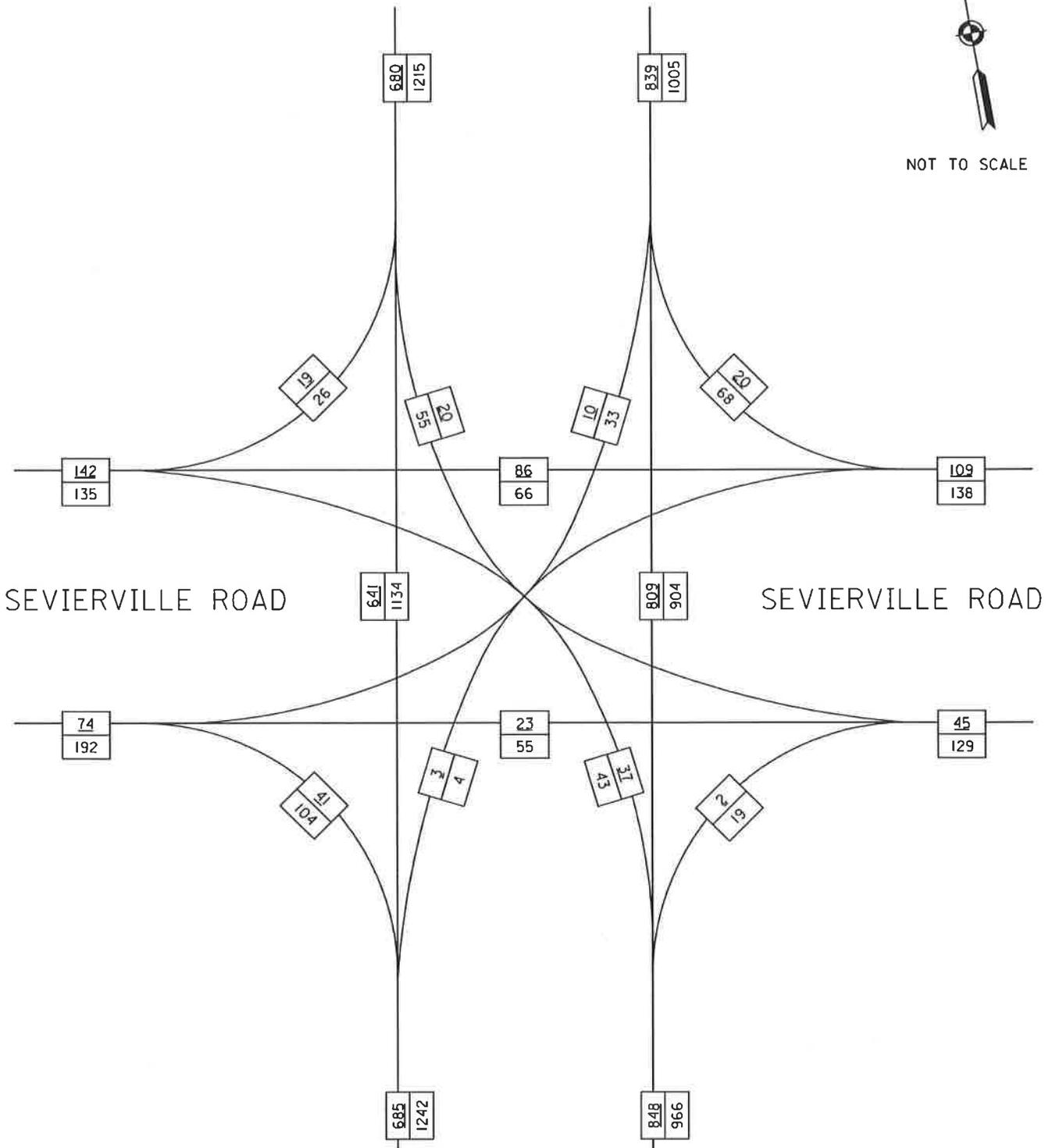
2020 DHV WITH PPE
AM / PM

SR 33 @ SR 35

SR 35/
N. WASHINGTON STREET



NOT TO SCALE

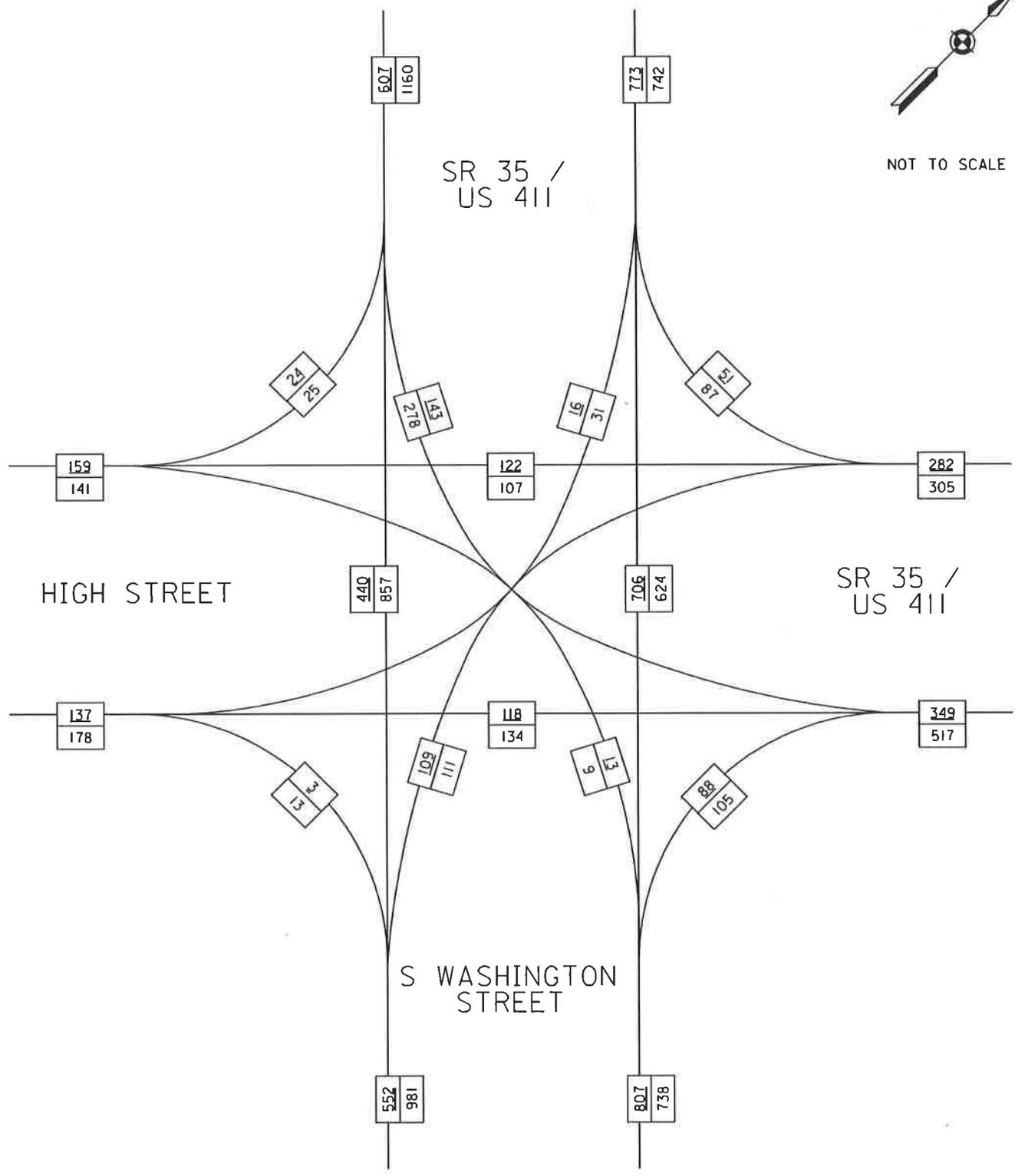


2020 DHV WITH PPE
AM / PM

SEVIERVILLE ROAD @
SR 35/WASHINGTON STREET



NOT TO SCALE

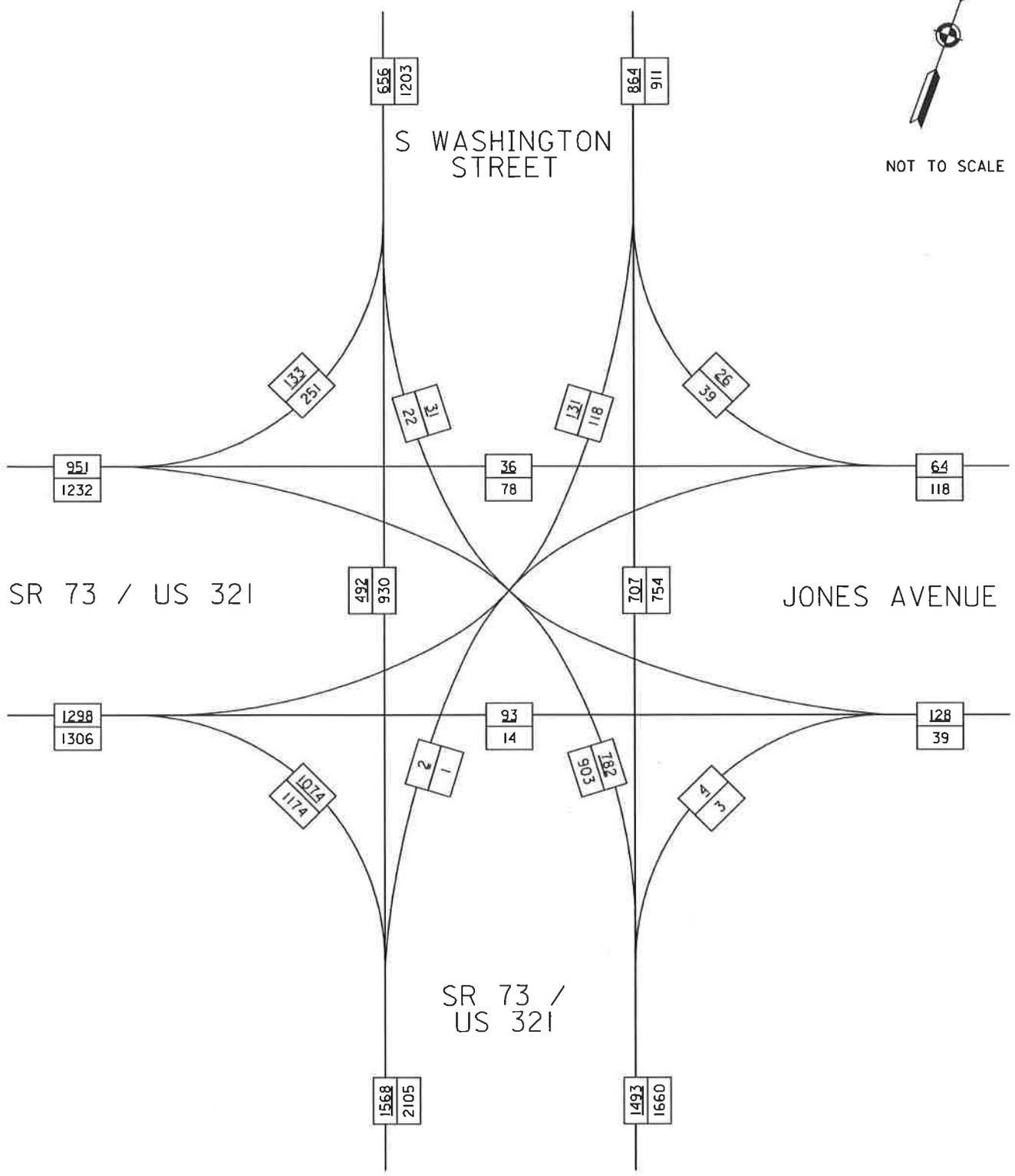


2020 DHV WITH PPE
AM / PM

S WASHINGTON ST / SR 35
@ HIGH ST / SR 35



NOT TO SCALE



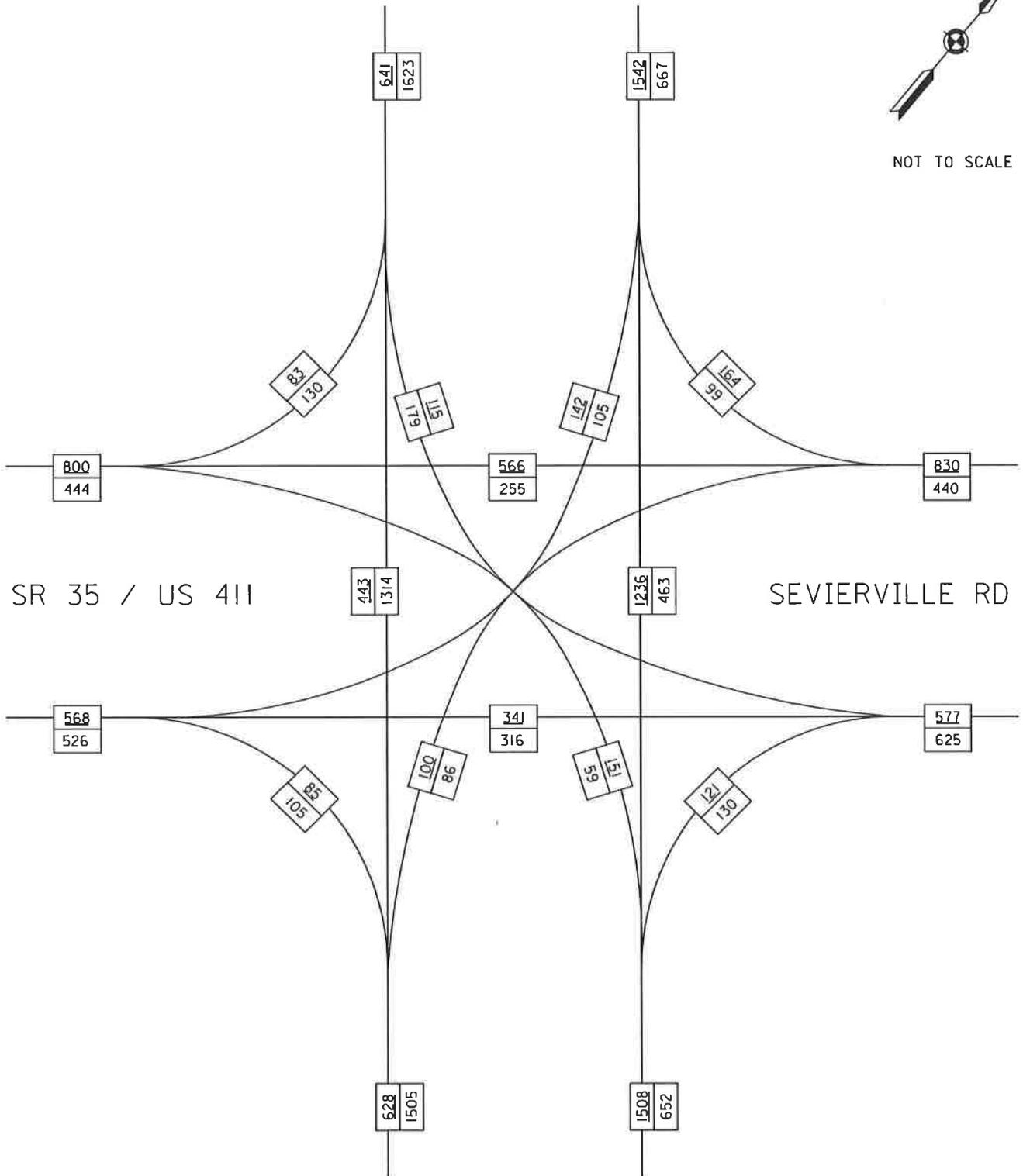
2020 DHV WITH PPE
AM / PM

S WASHINGTON ST
@ SR 73 / US 321

PELLISSIPPI PKWY
EXTENSION



NOT TO SCALE



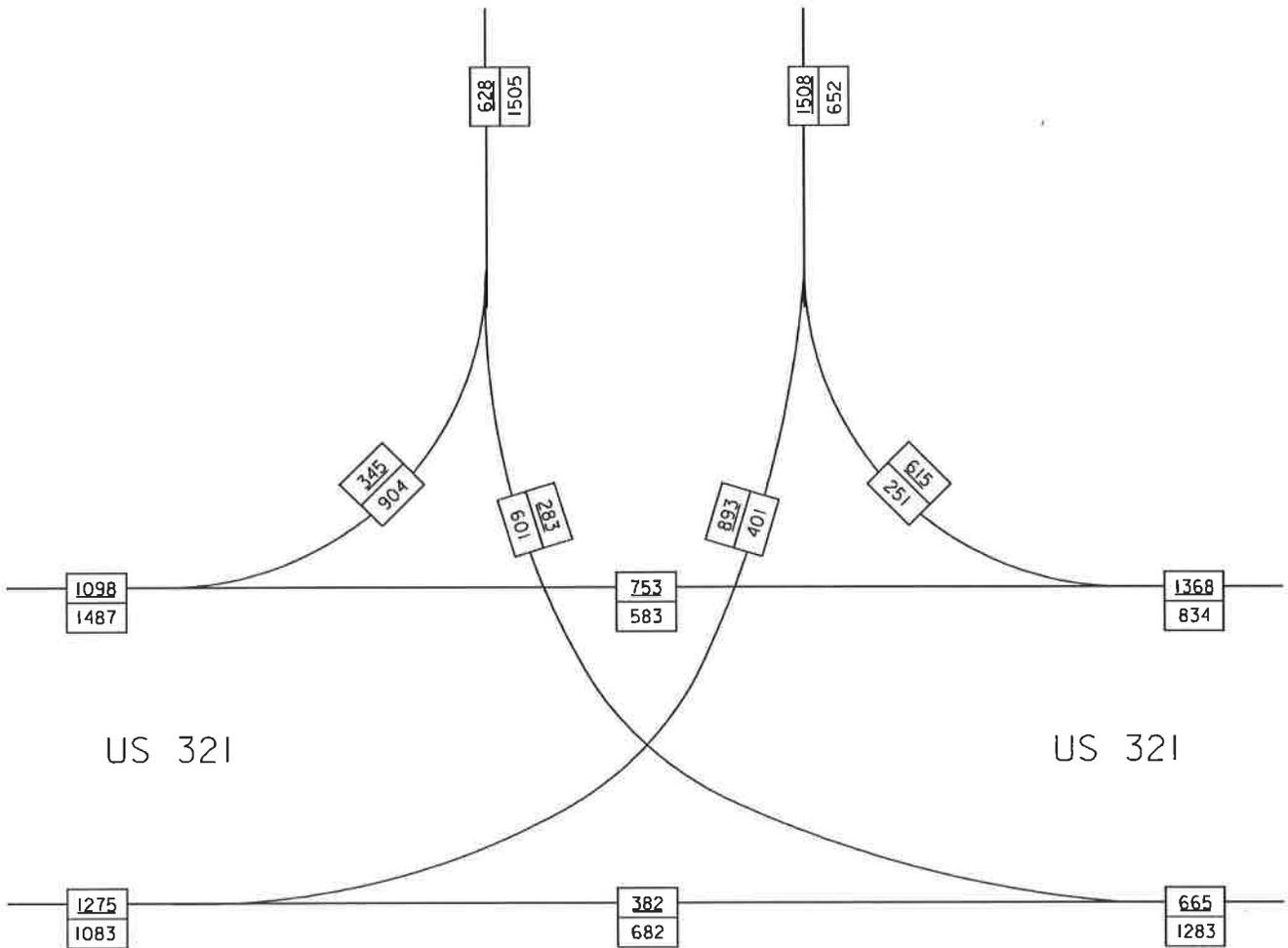
2020 DHV WITH PPE
AM / PM

PELLISSIPPI PKWY EXTENSION @
SR 35 / US 411 / SEVIERVILLE RD



NOT TO SCALE

PELLISSIPPI PKWY EXTENSION

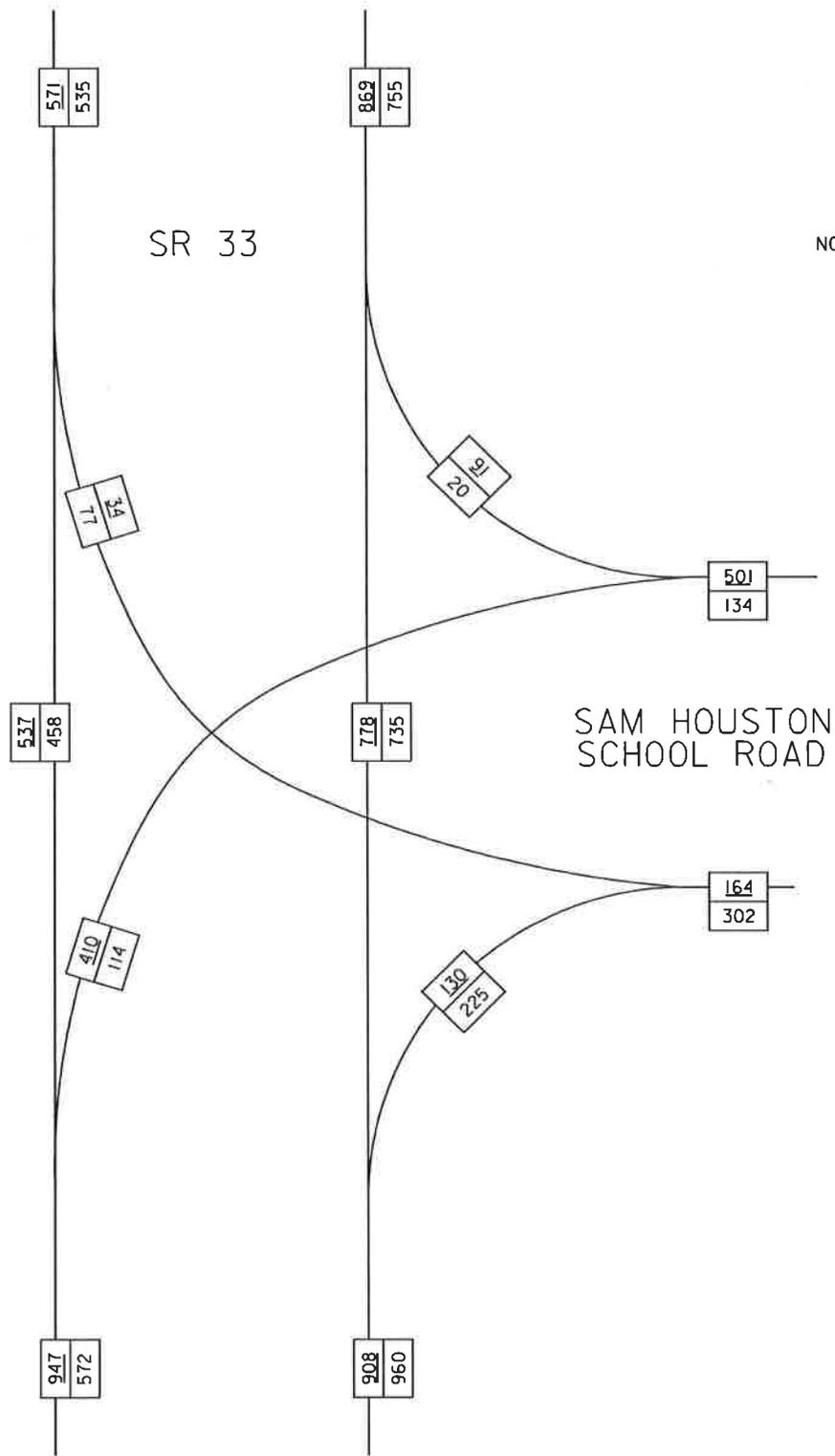


2020 DHV WITH PPE
AM / PM

PELLISSIPPI PKWY EXTENSION @
US 321



NOT TO SCALE

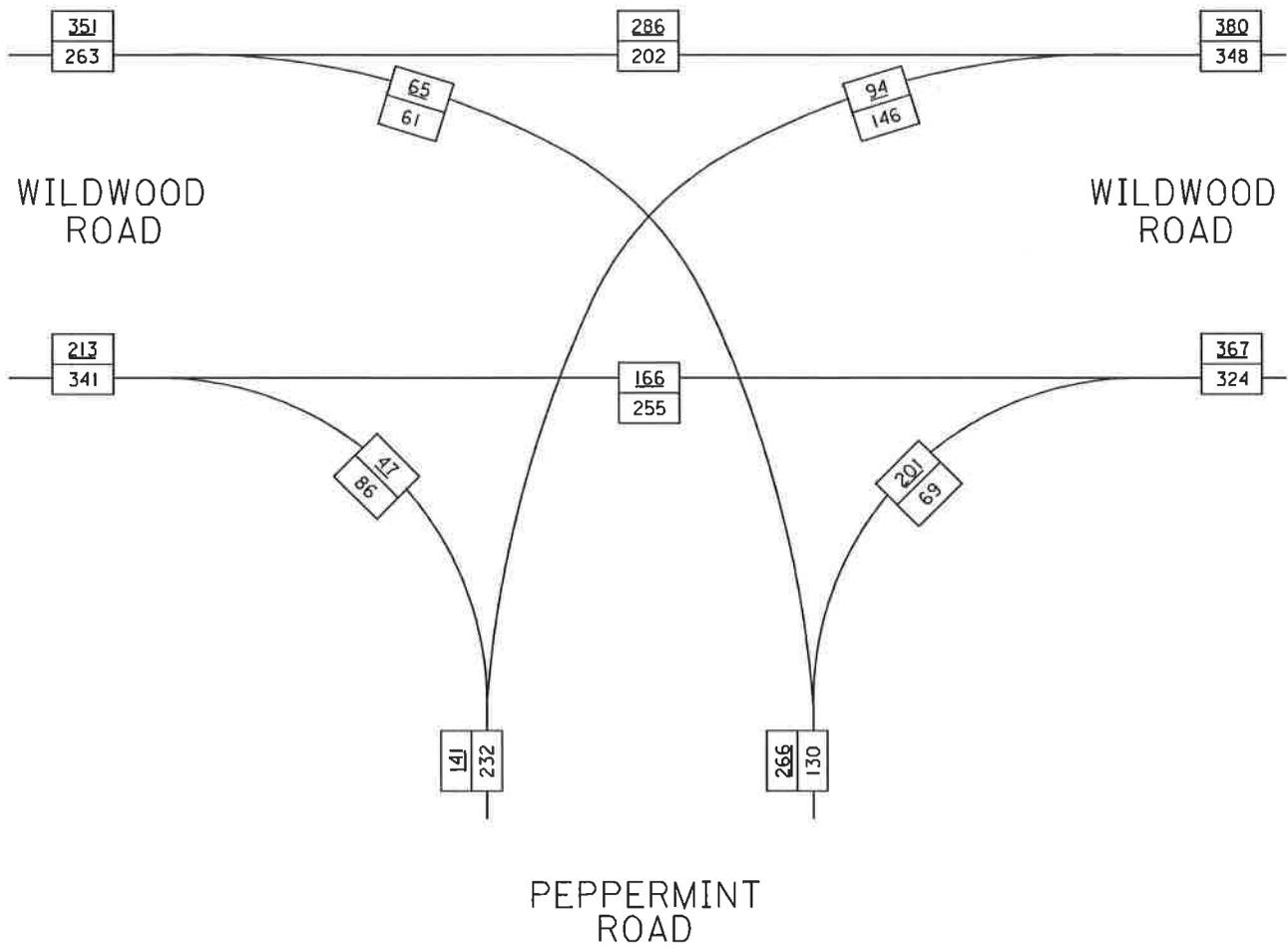


2020 DHV WITH PPE
AM / PM

SR 33 @
SAM HOUSTON SCHOOL ROAD



NOT TO SCALE



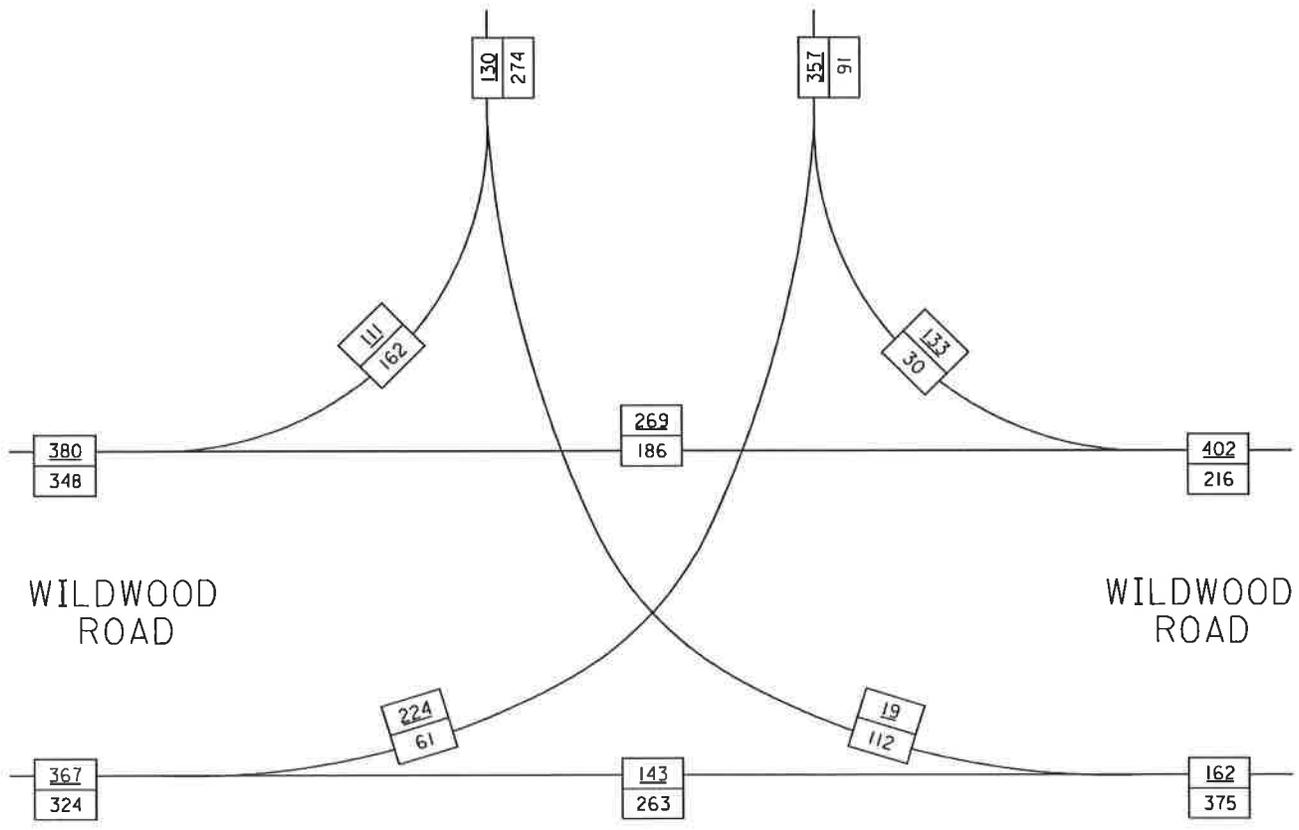
2020 DHV WITH PPE
AM / PM

PEPPERMINT ROAD @
WILDWOOD ROAD



NOT TO SCALE

SAM HOUSTON SCHOOL ROAD

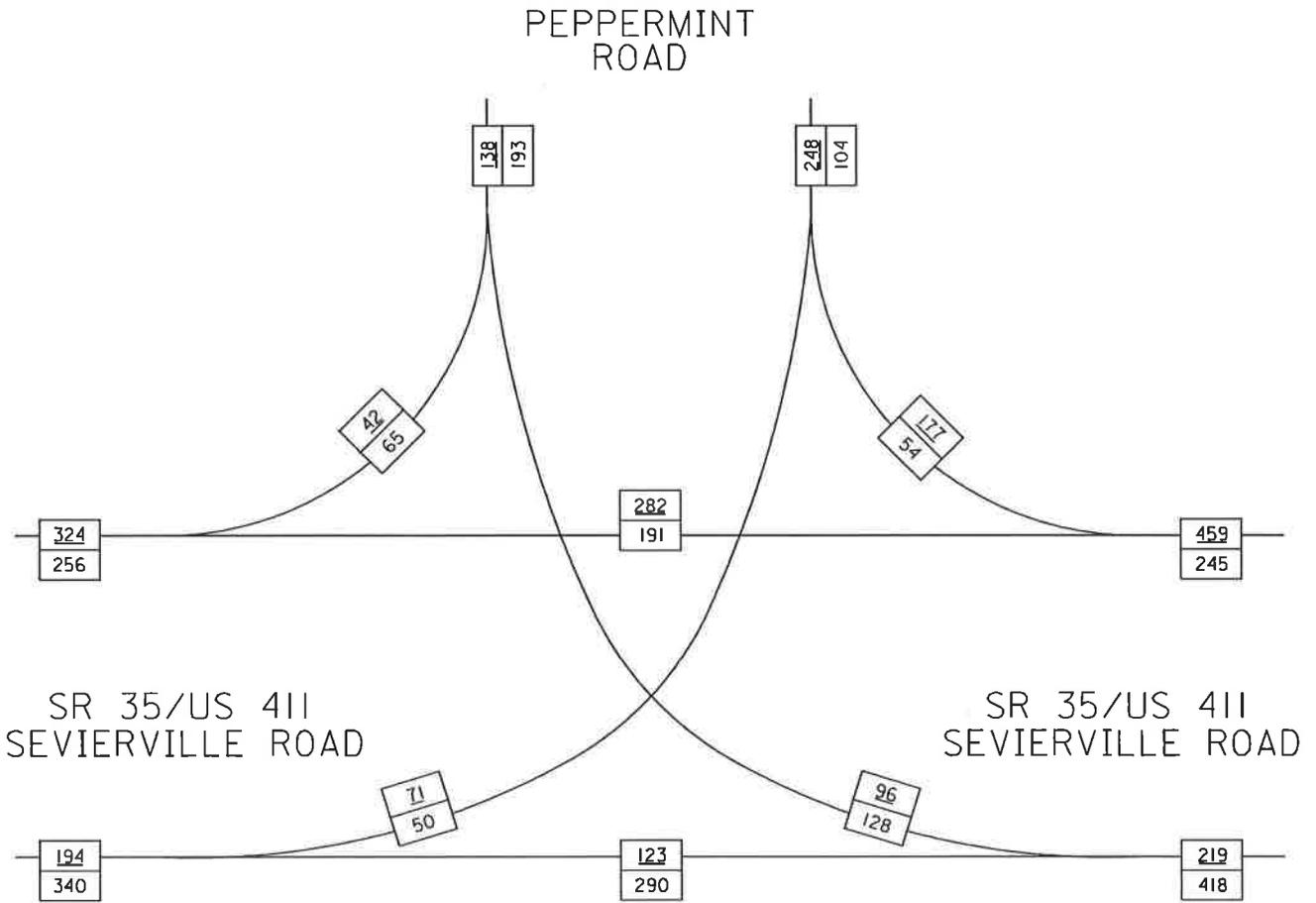


2020 DHV WITH PPE
AM / PM

SAM HOUSTON SCHOOL ROAD @
WILDWOOD ROAD



NOT TO SCALE



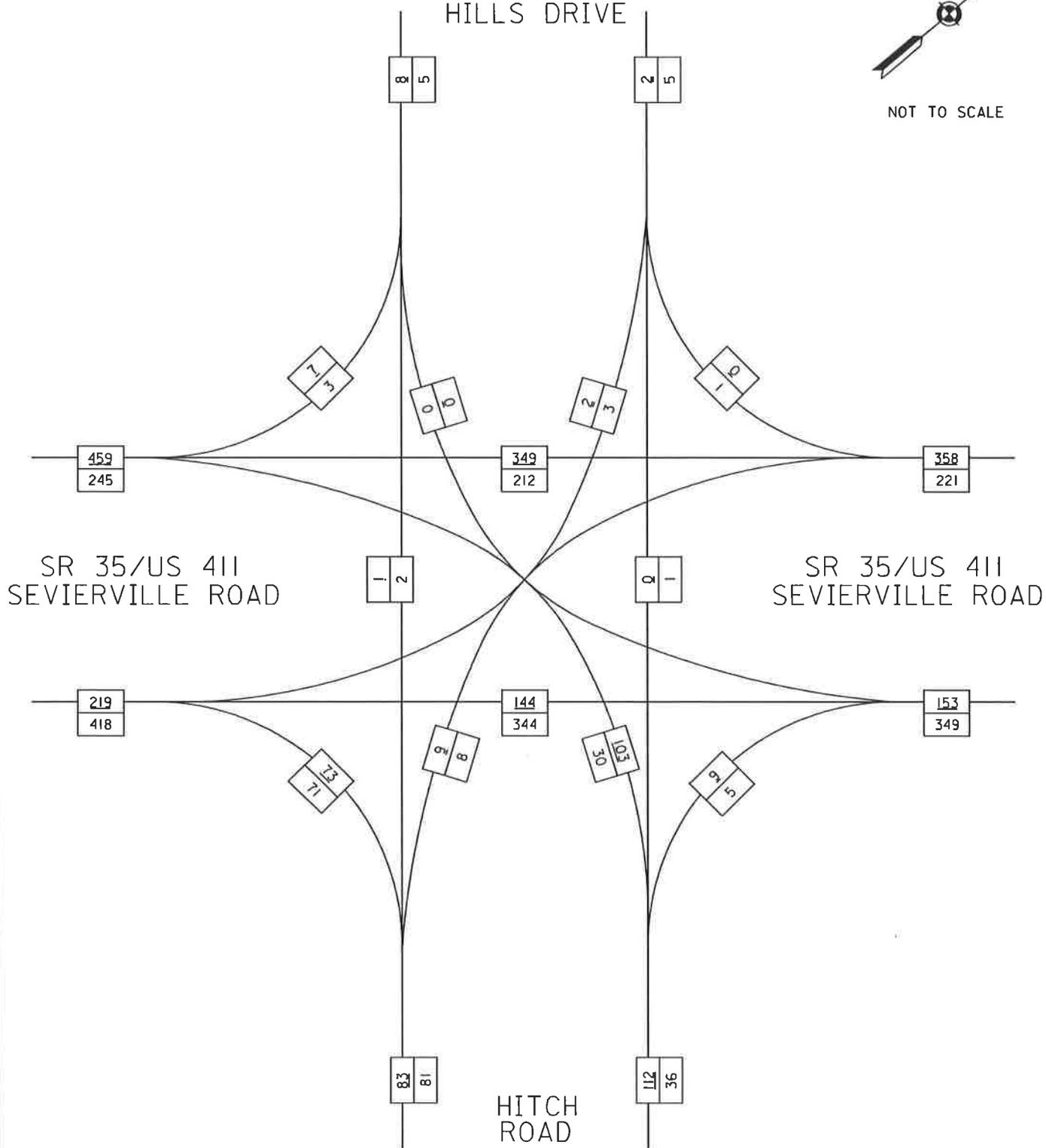
2020 DHV WITH PPE
AM / PM

SR 35/US 411/SEVIERVILLE ROAD @
PEPPERMINT ROAD

PEPPERMINT HILLS DRIVE



NOT TO SCALE

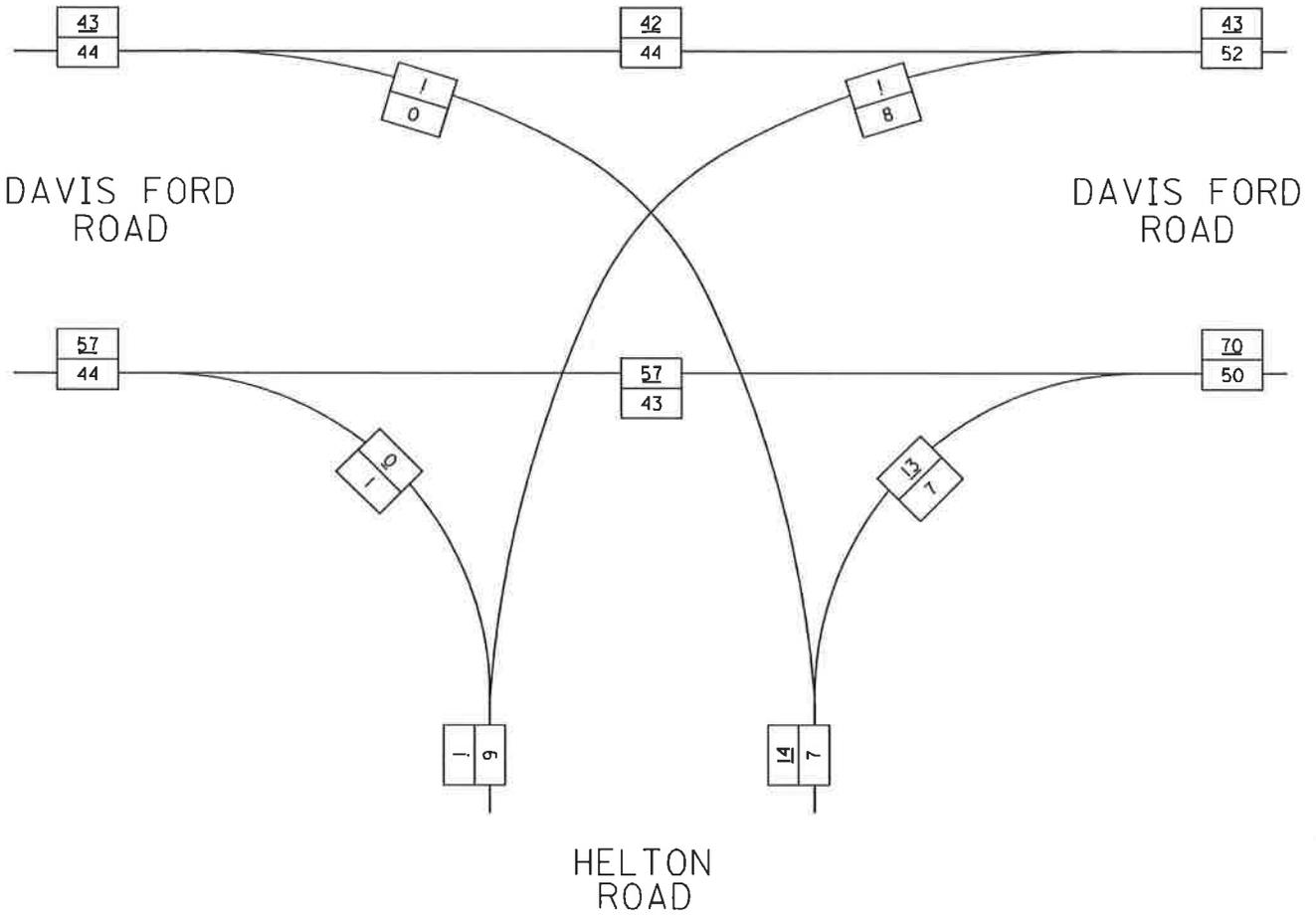


2020 DHV WITH PPE
AM / PM

SR 35/US 411/SEVIERVILLE ROAD @
HITCH ROAD/PEPPERMINT HILLS DR



NOT TO SCALE

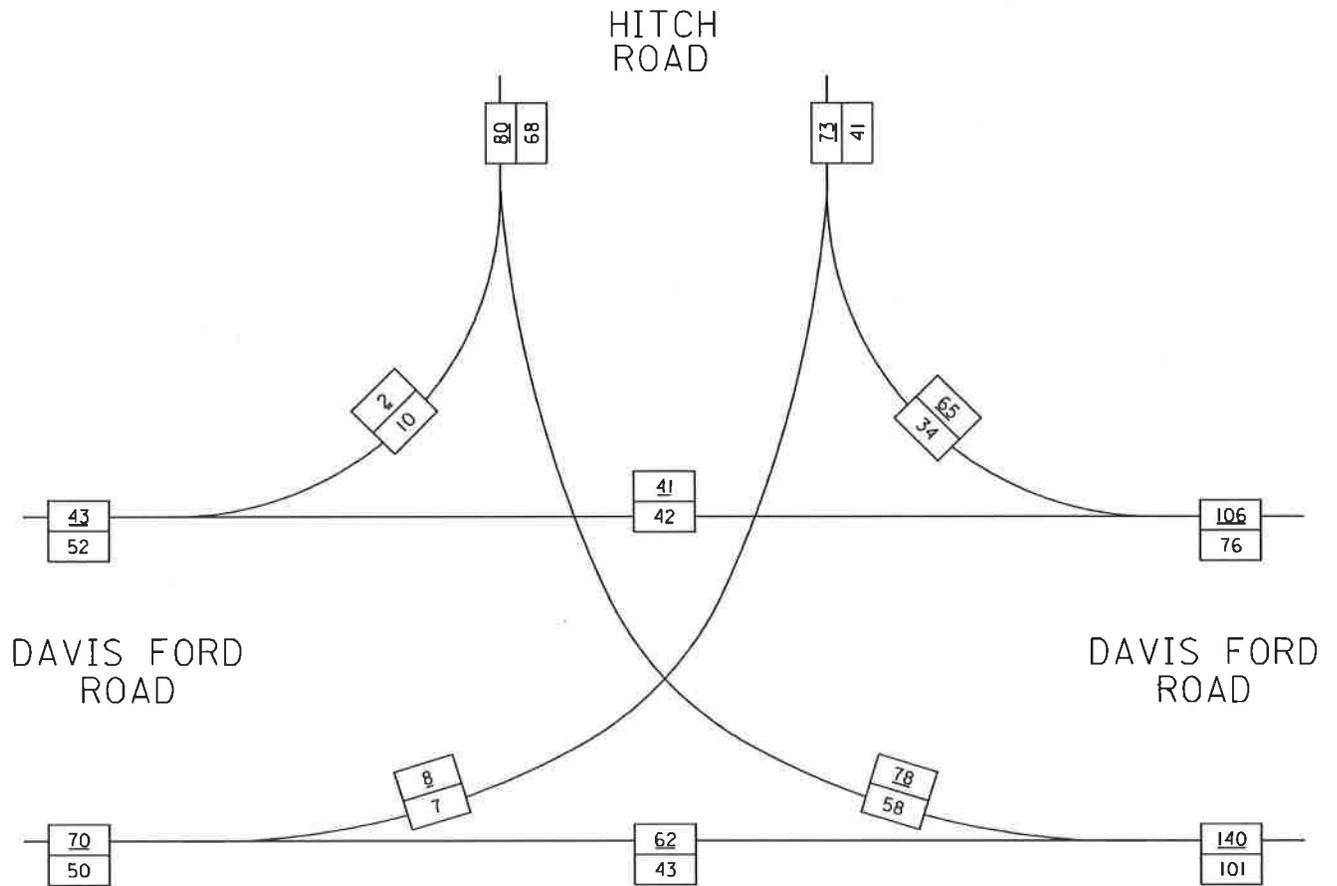


2020 DHV WITH PPE
AM / PM

DAVIS FORD ROAD @
HELTON ROAD



NOT TO SCALE

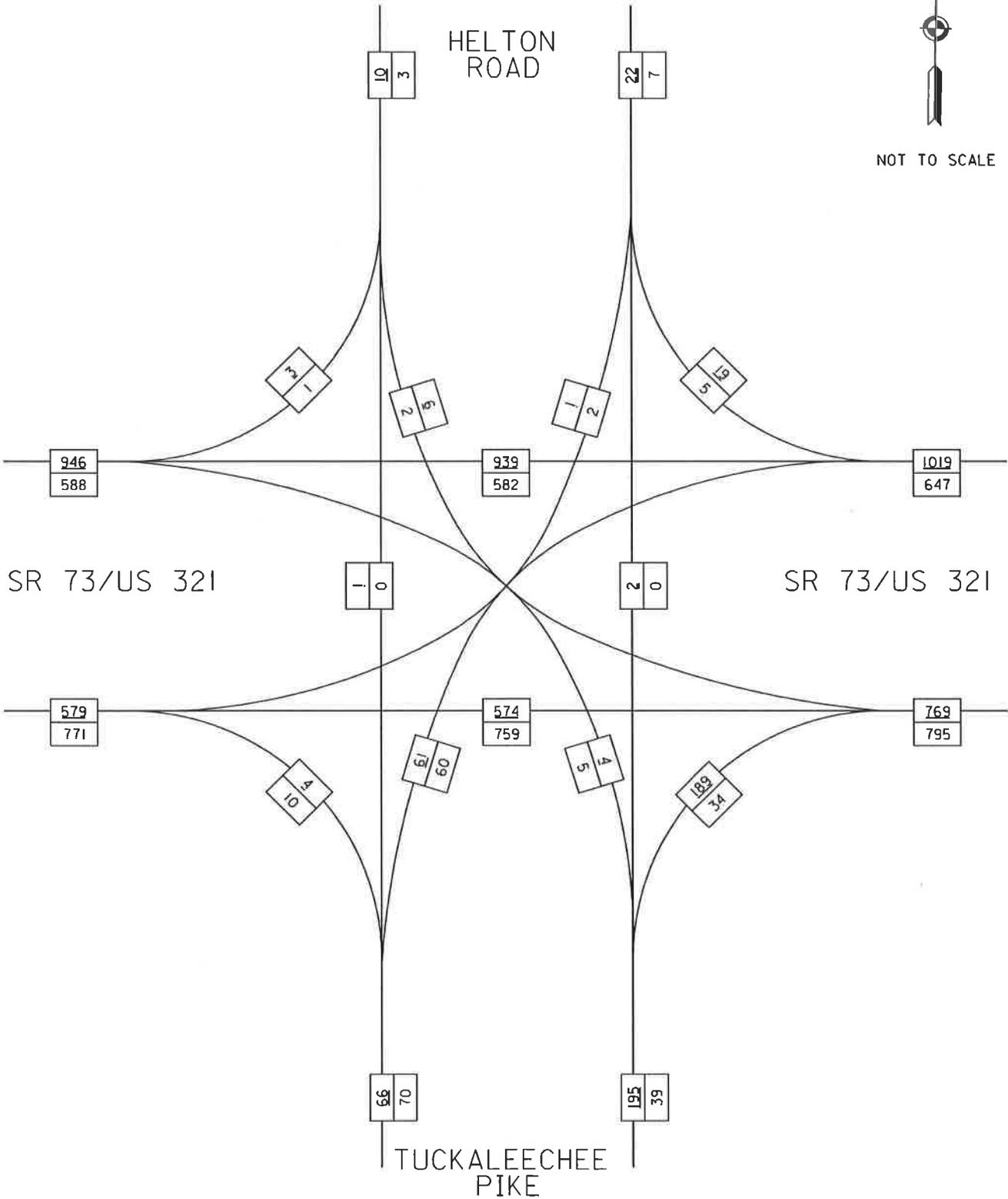


2020 DHV WITH PPE
AM / PM

DAVIS FORD ROAD @
HITCH ROAD



NOT TO SCALE



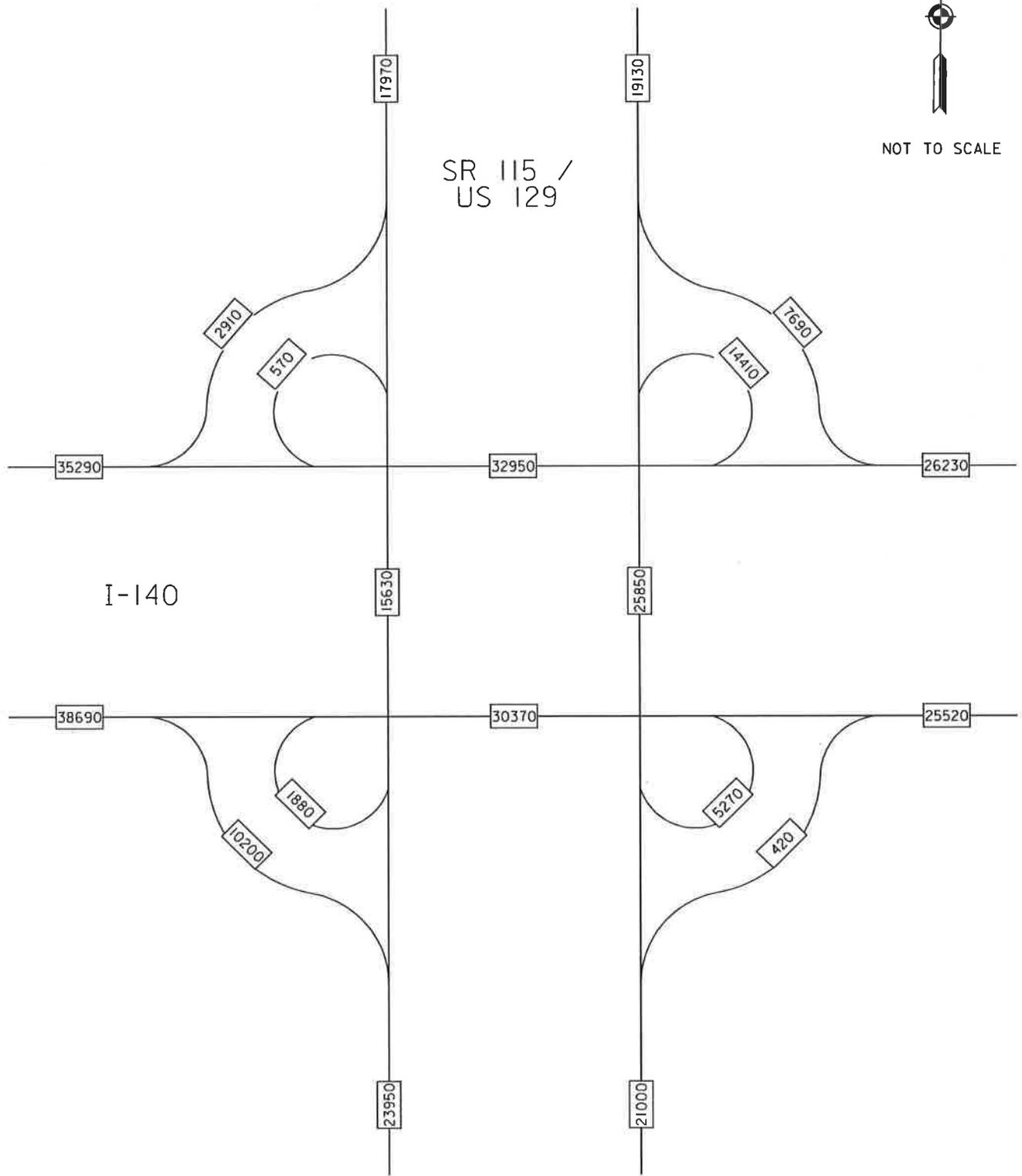
2020 DHV WITH PPE
AM / PM

SR 73/US 321 @
HELTON ROAD/TUCKALEECHEE PIKE



NOT TO SCALE

SR 115 /
US 129

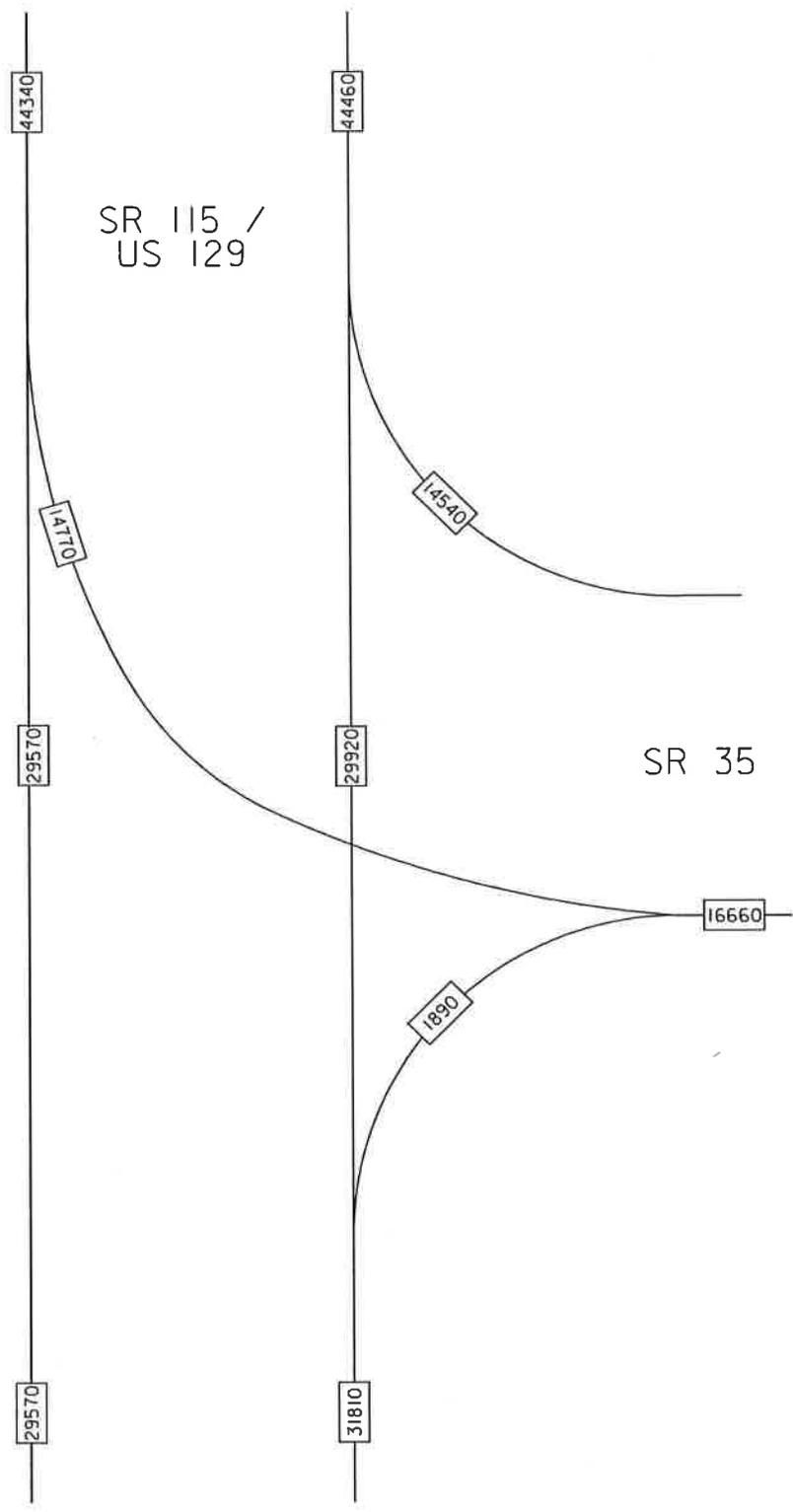


2040 AADT WITH PPE

SR 115/US 129 @
I-140 / PELLISSIPPI PARKWAY



NOT TO SCALE



SR 115 /
US 129

SR 35

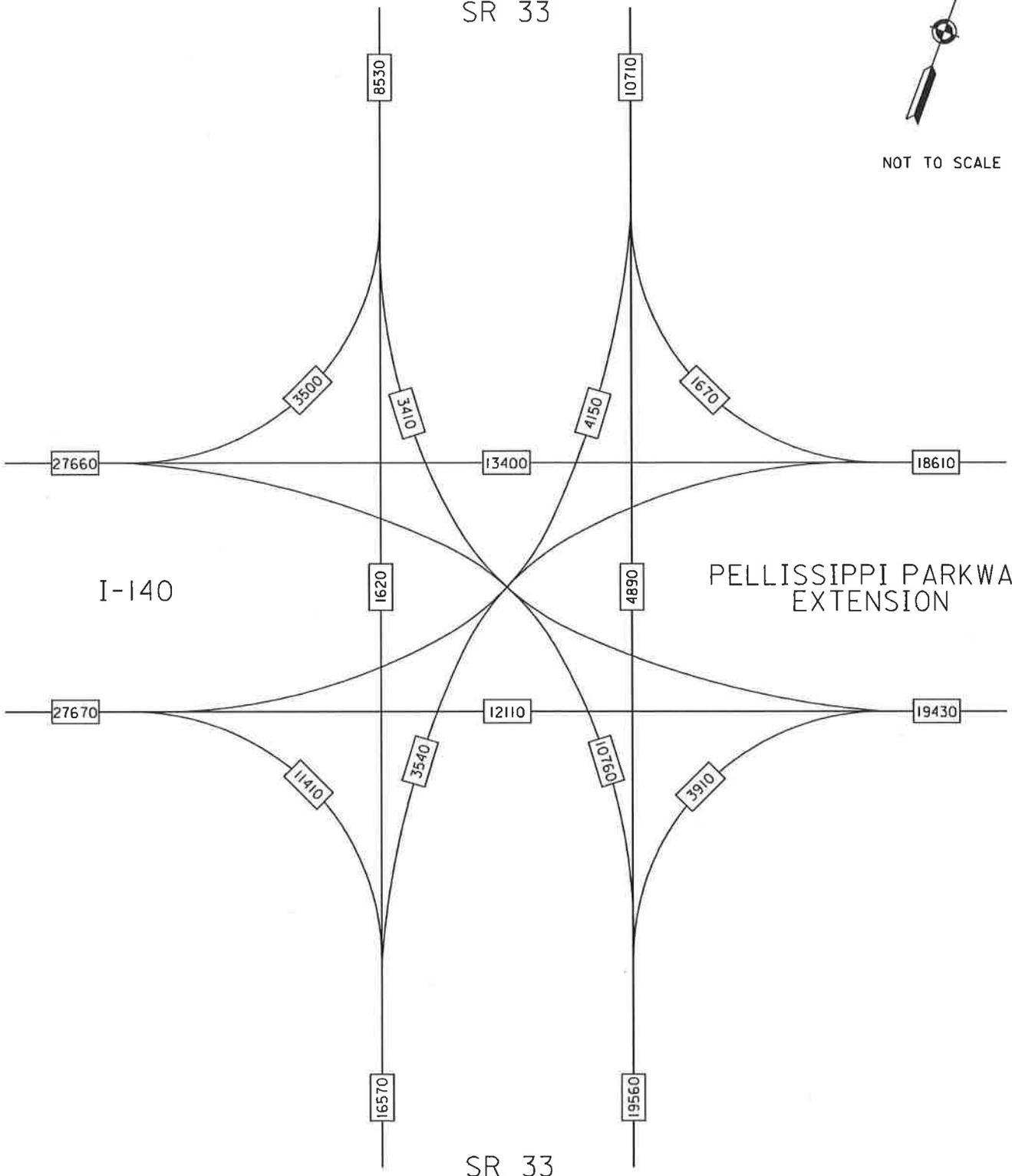
2040 AADT WITH PPE

SR 115/US 129 @ SR 35

SR 33



NOT TO SCALE



I-140

PELLISSIPPI PARKWAY
EXTENSION

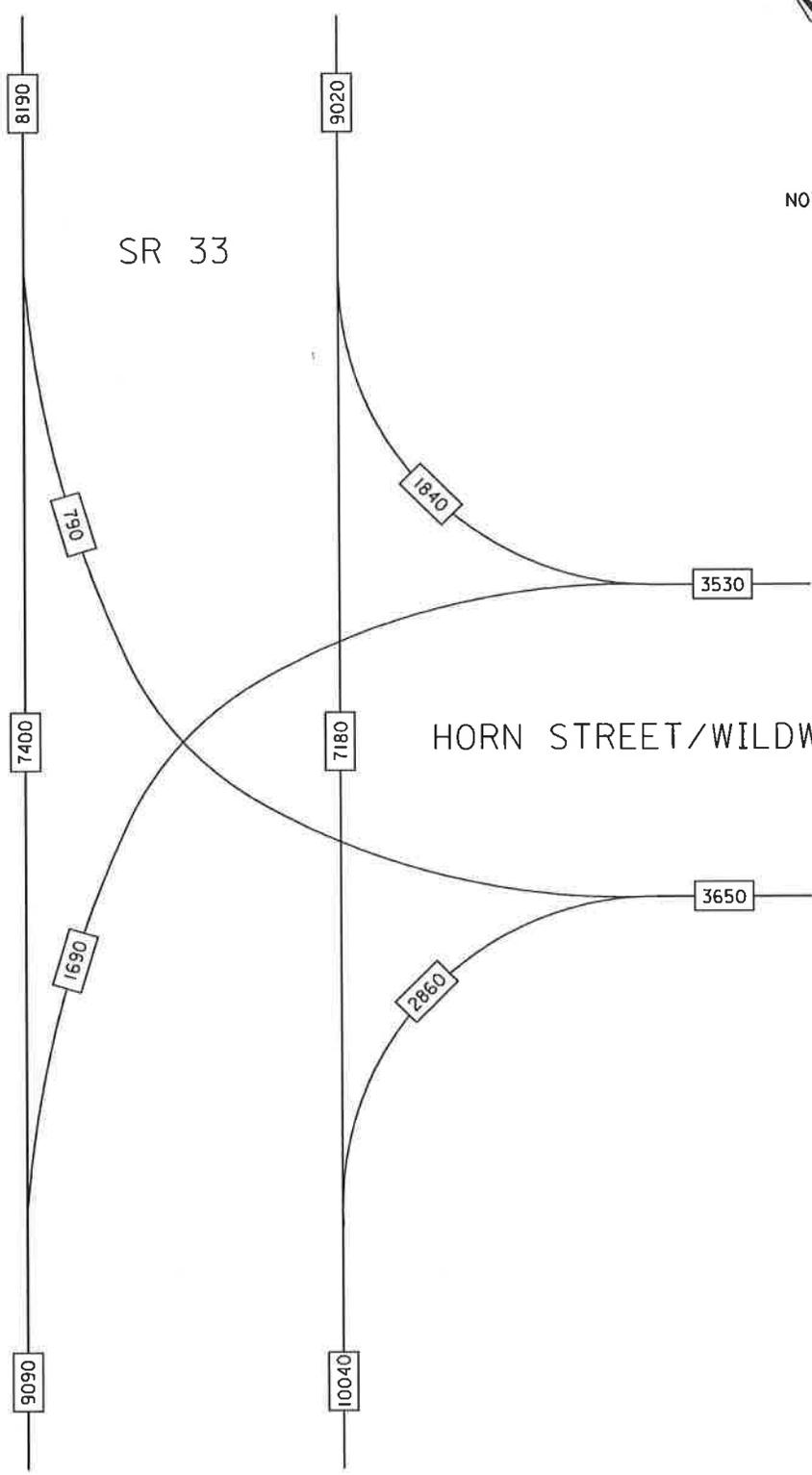
SR 33

2040 AADT WITH PPE

SR 33 @
I-140 / PELLISSIPPI PKWY EXTENSION



NOT TO SCALE

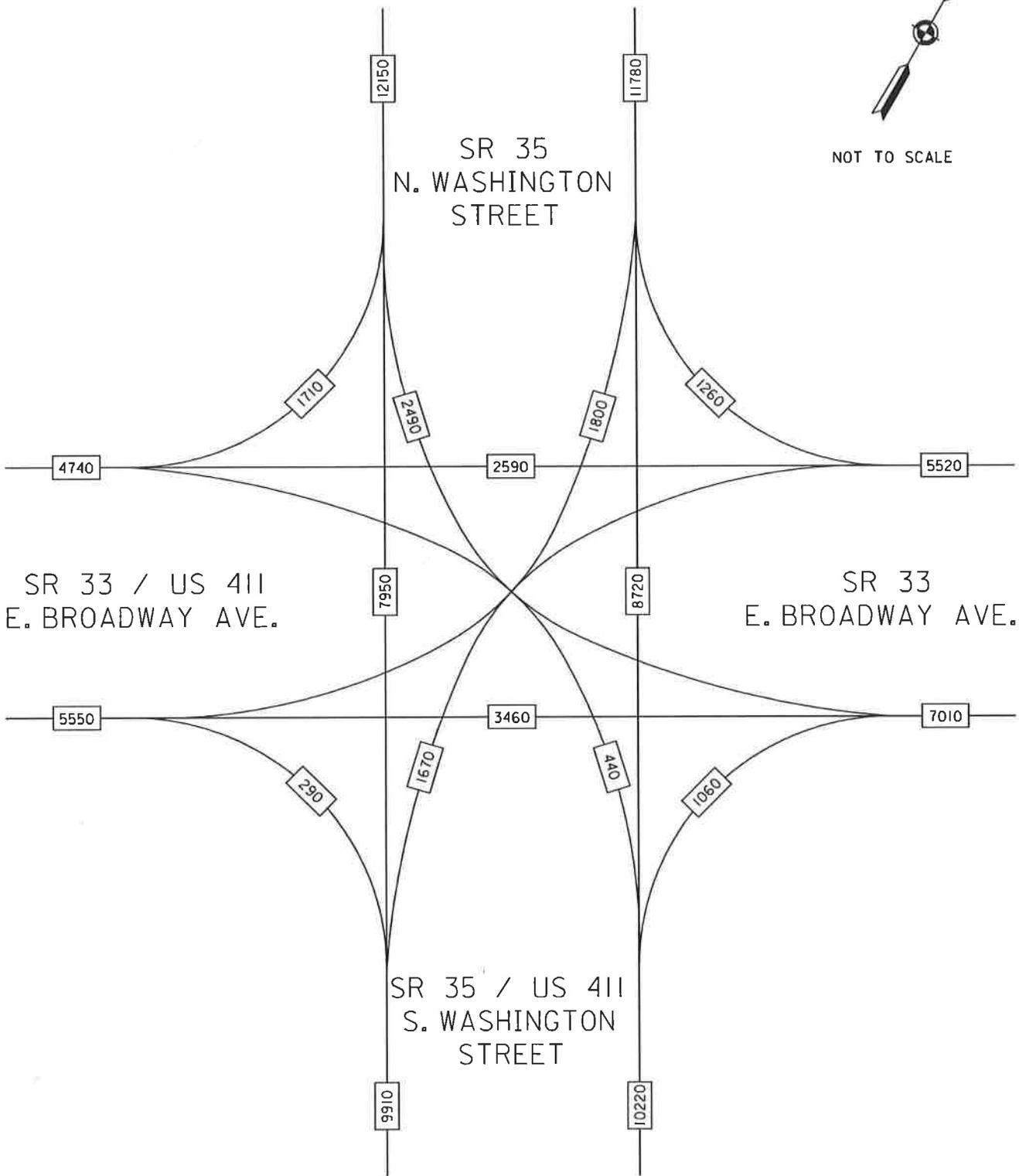


2040 AADT WITH PPE

SR 33 @ HORN STREET/
WILDWOOD ROAD



NOT TO SCALE



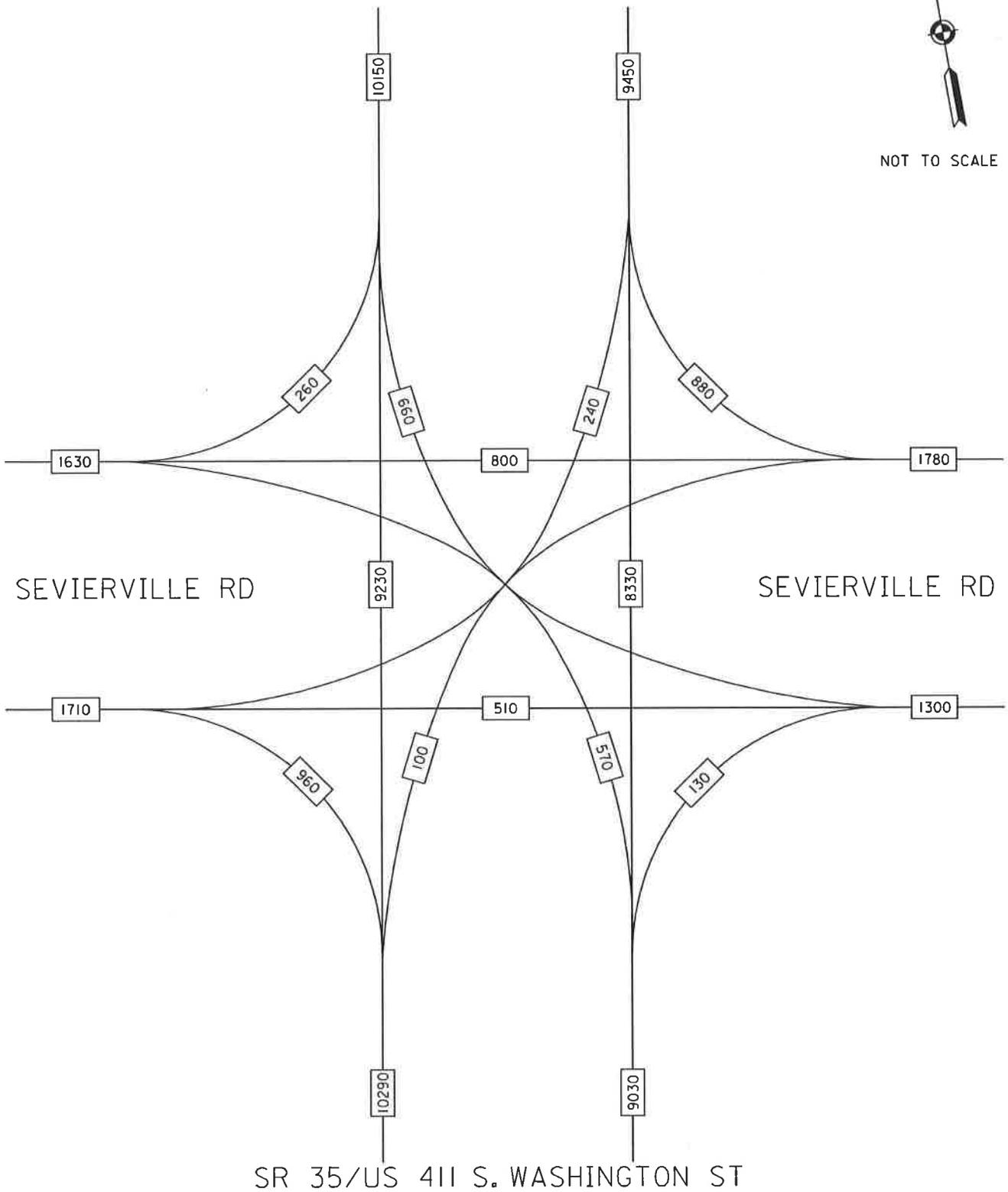
2040 AADT WITH PPE

SR 33 @ SR 35

SR 35/N. WASHINGTON ST



NOT TO SCALE

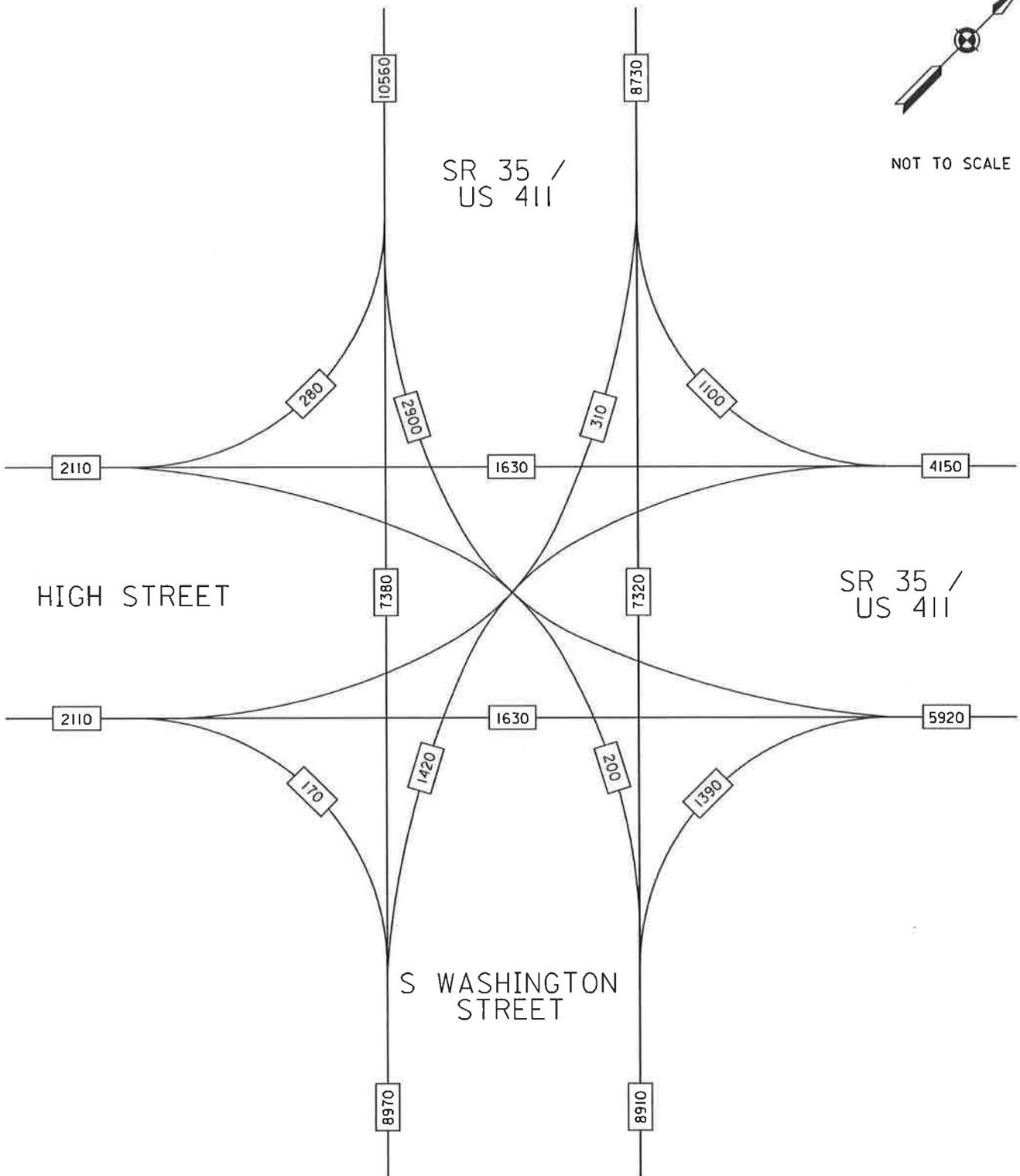


2040 AADT WITH PPE

SEVIERVILLE RD @
SR 35/US 411 WASHINGTON ST



NOT TO SCALE

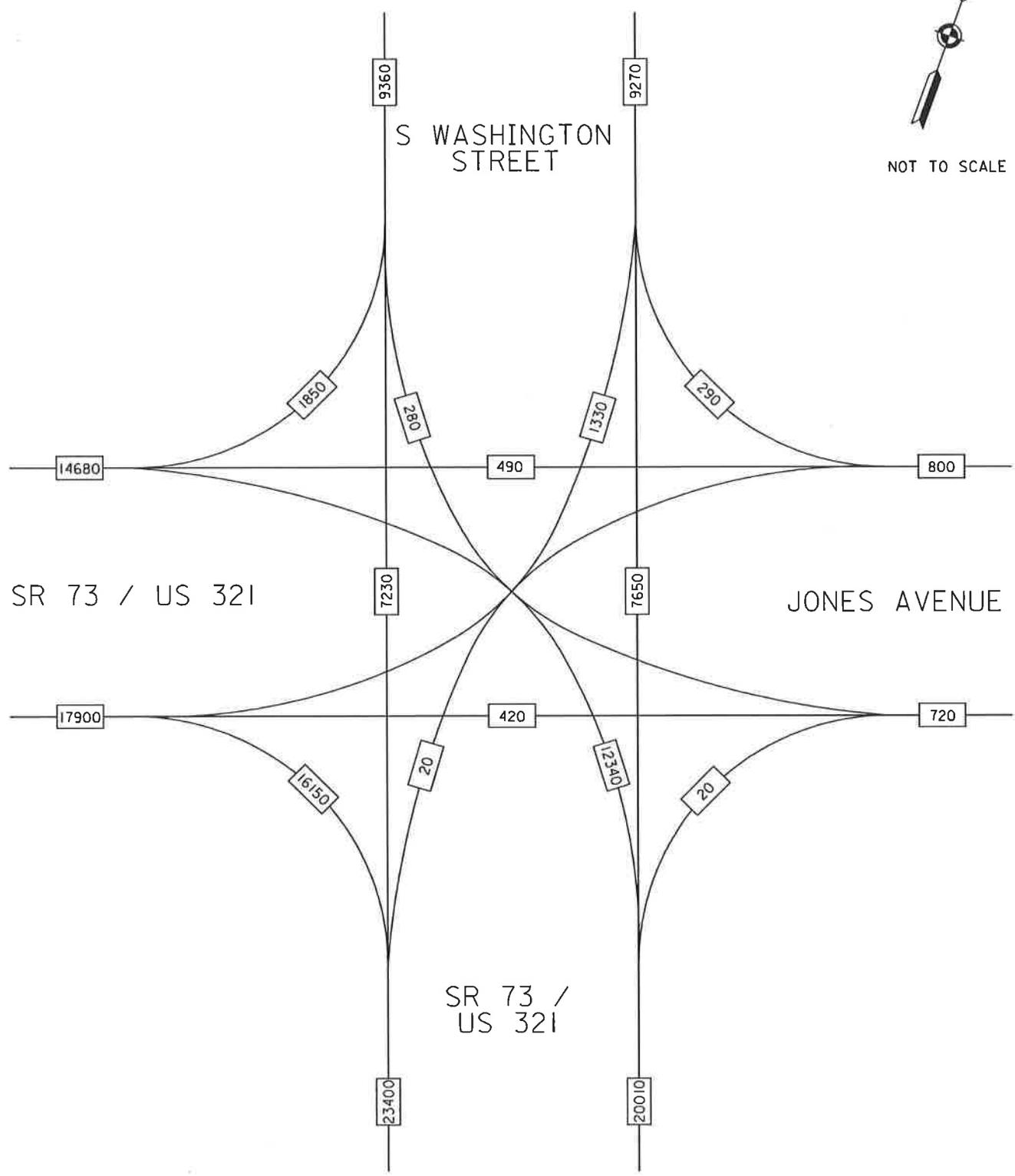


2040 AADT WITH PPE

S WASHINGTON ST / SR 35
@ HIGH ST / SR 35



NOT TO SCALE

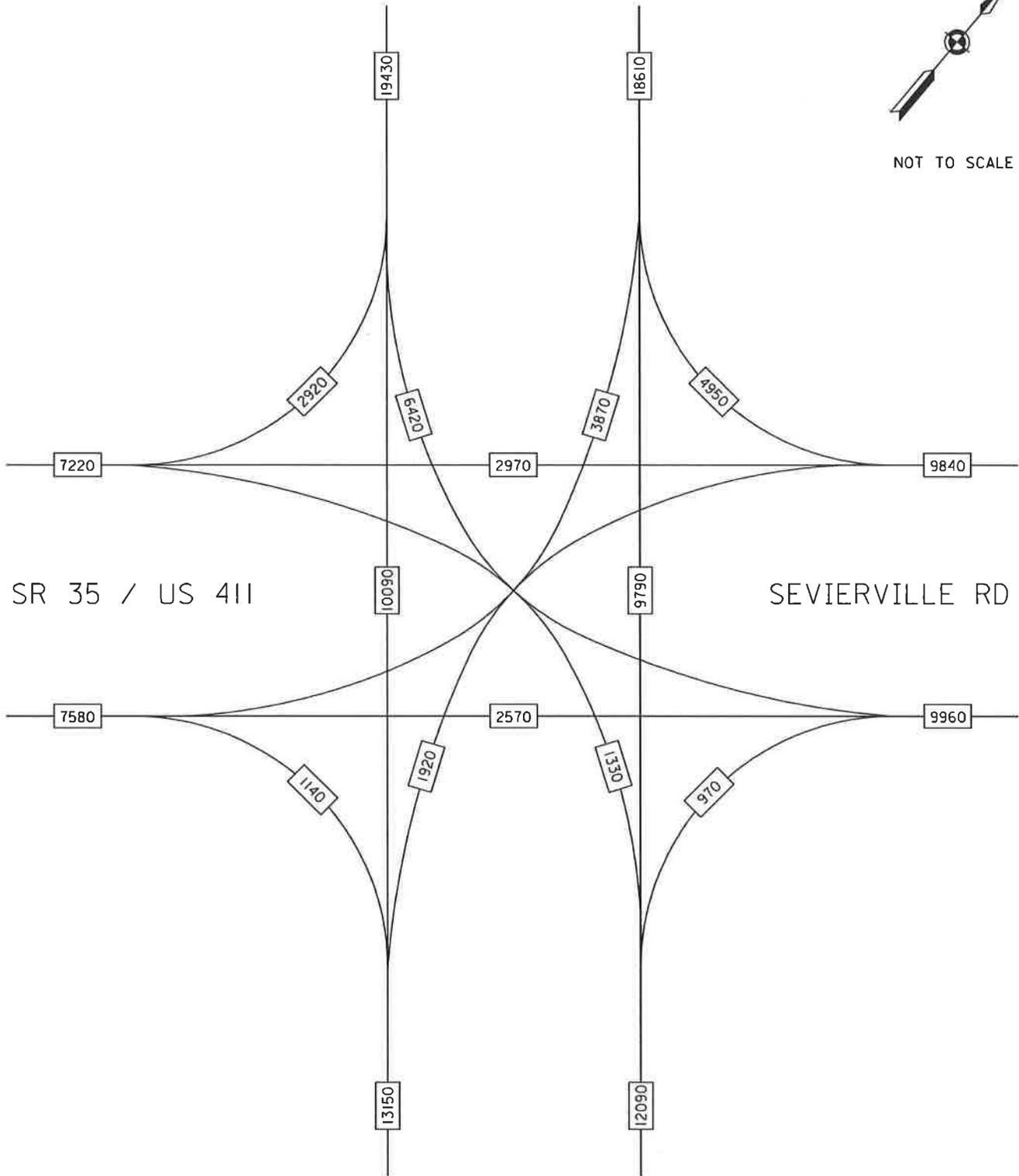


2040 AADT WITH PPE	S WASHINGTON ST @ SR 73/ US 321
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PELLISSIPPI PKWY
EXTENSION



NOT TO SCALE



PELLISSIPPI PKWY
EXTENSION

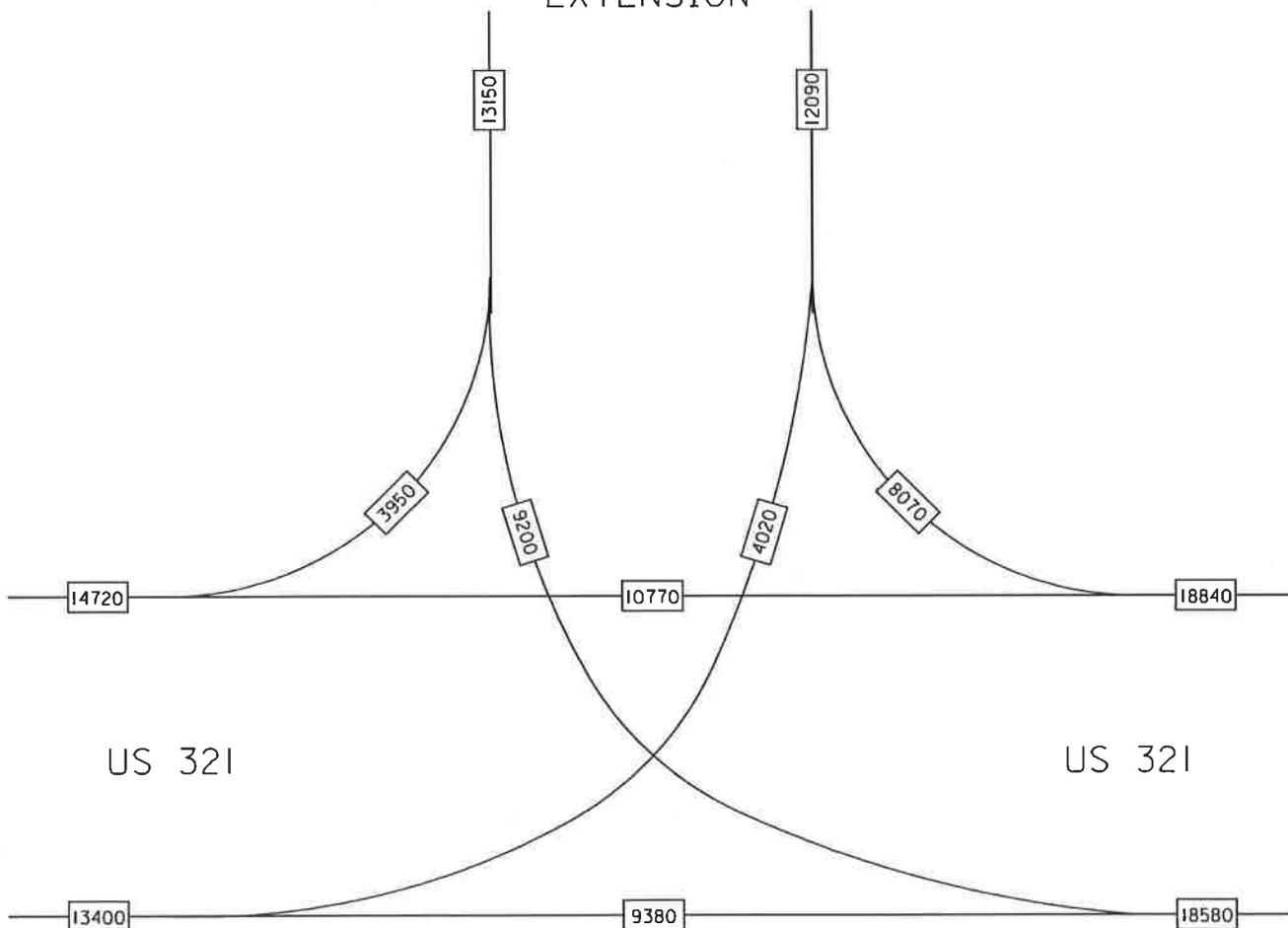
2040 AADT WITH PPE

PELLISSIPPI PKWY EXTENSION @
SR 35 / US 411 / SEVIERVILLE RD



NOT TO SCALE

PELLISSIPPI PARKWAY EXTENSION

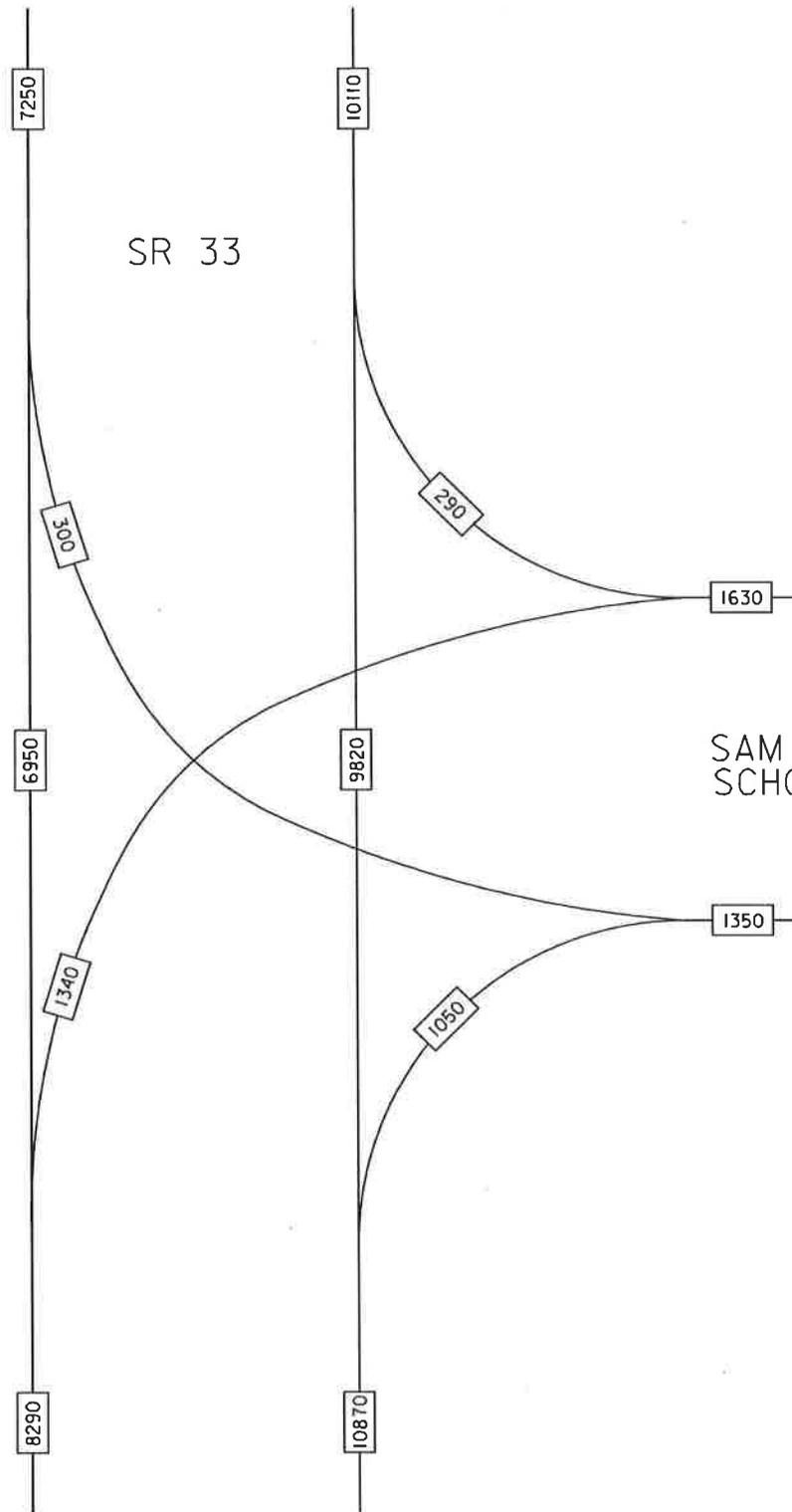


2040 AADT WITH PPE

PELLISSIPPI PKWY EXTENSION @
US 321



NOT TO SCALE

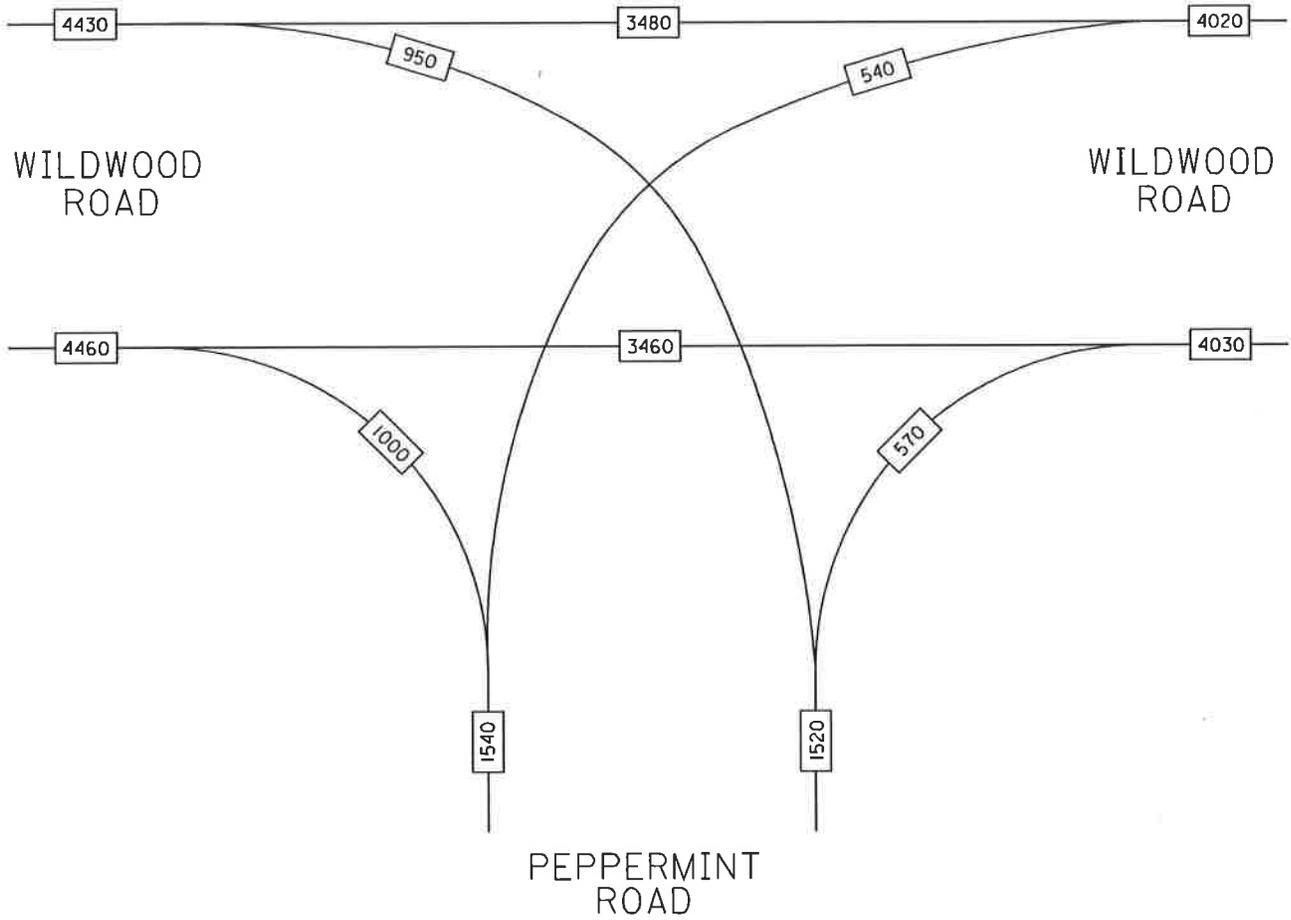


2040 AADT WITH PPE

SR 33 @
SAM HOUSTON SCHOOL ROAD



NOT TO SCALE



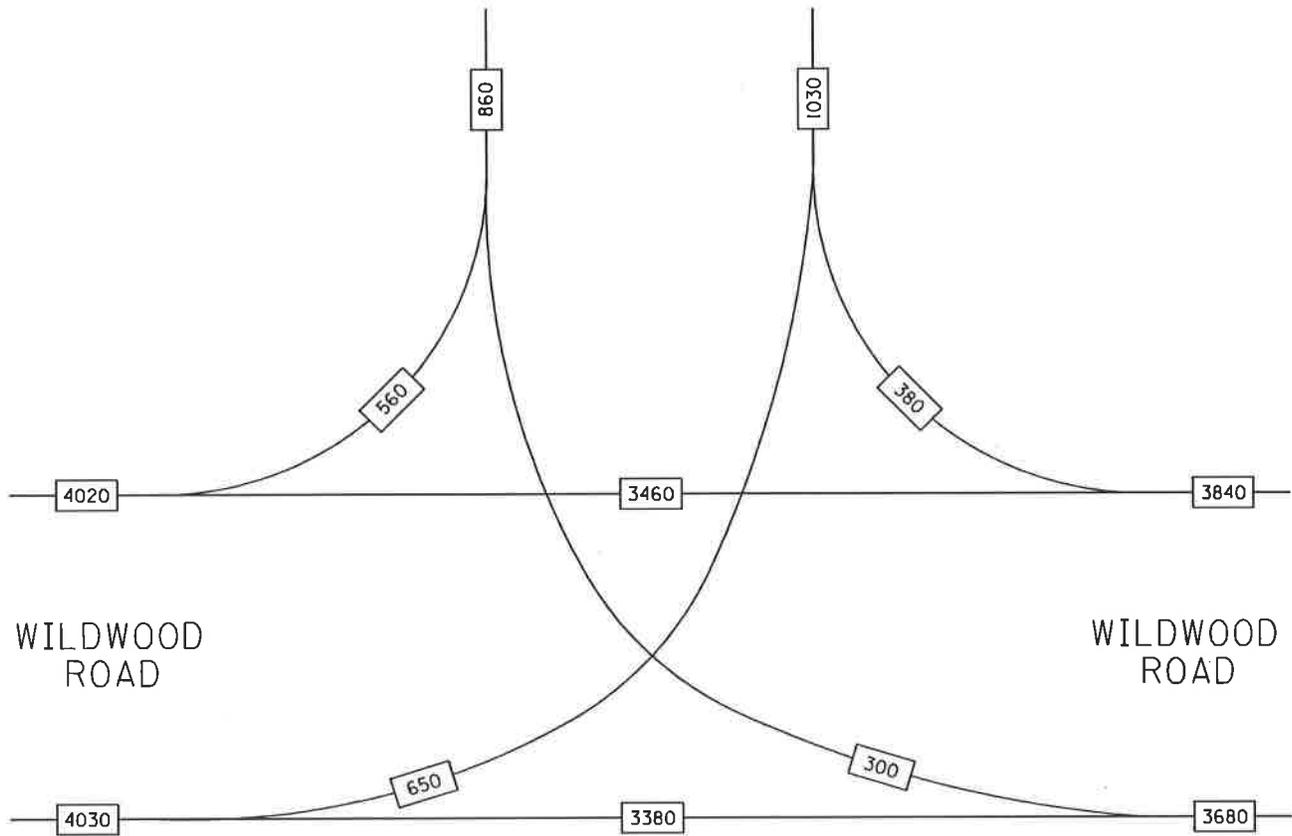
2040 AADT WITH PPE

PEPPERMINT ROAD @
WILDWOOD ROAD



NOT TO SCALE

SAM HOUSTON SCHOOL ROAD



WILDWOOD ROAD

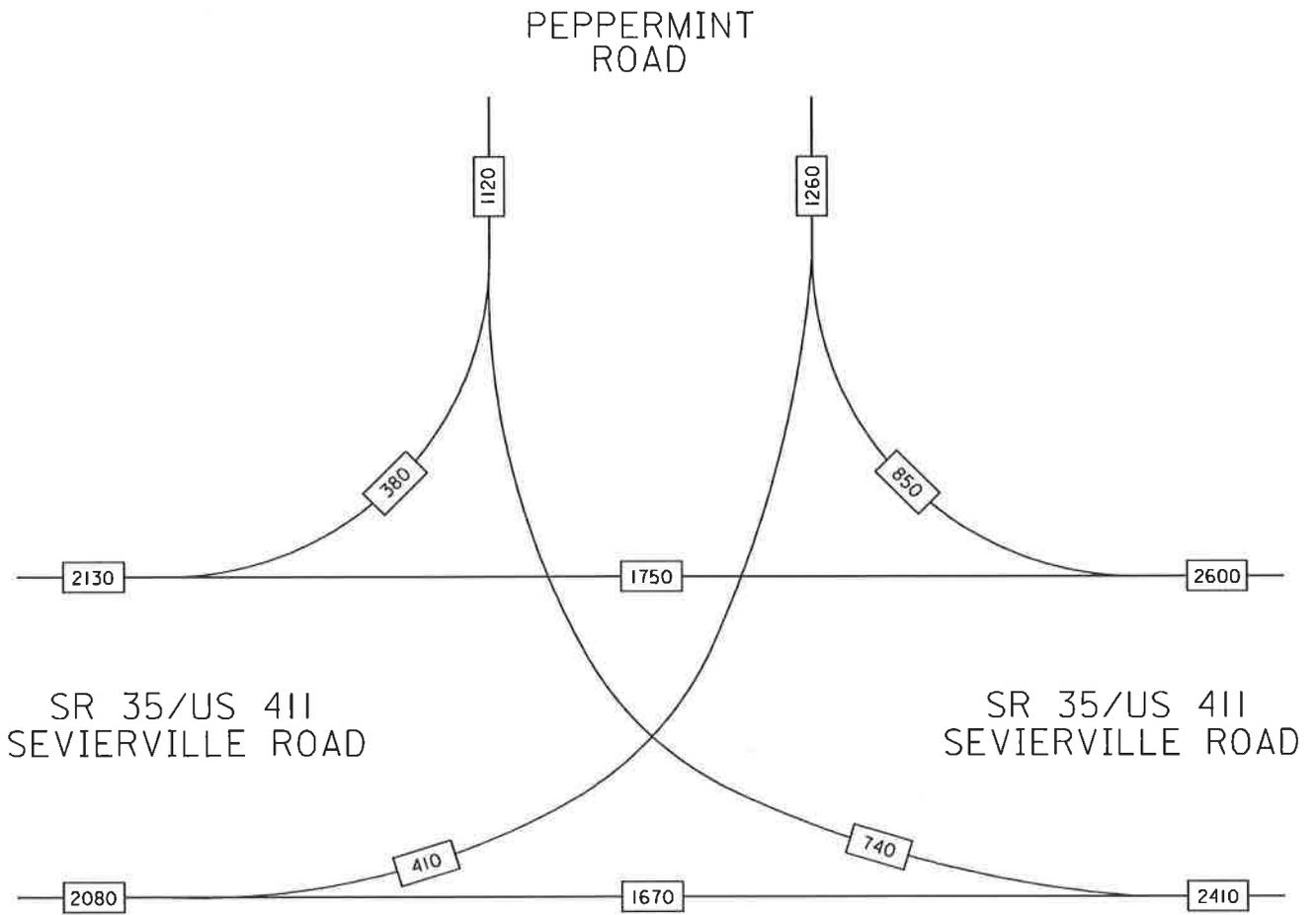
WILDWOOD ROAD

2040 AADT WITH PPE

SAM HOUSTON SCHOOL ROAD @ WILDWOOD ROAD



NOT TO SCALE



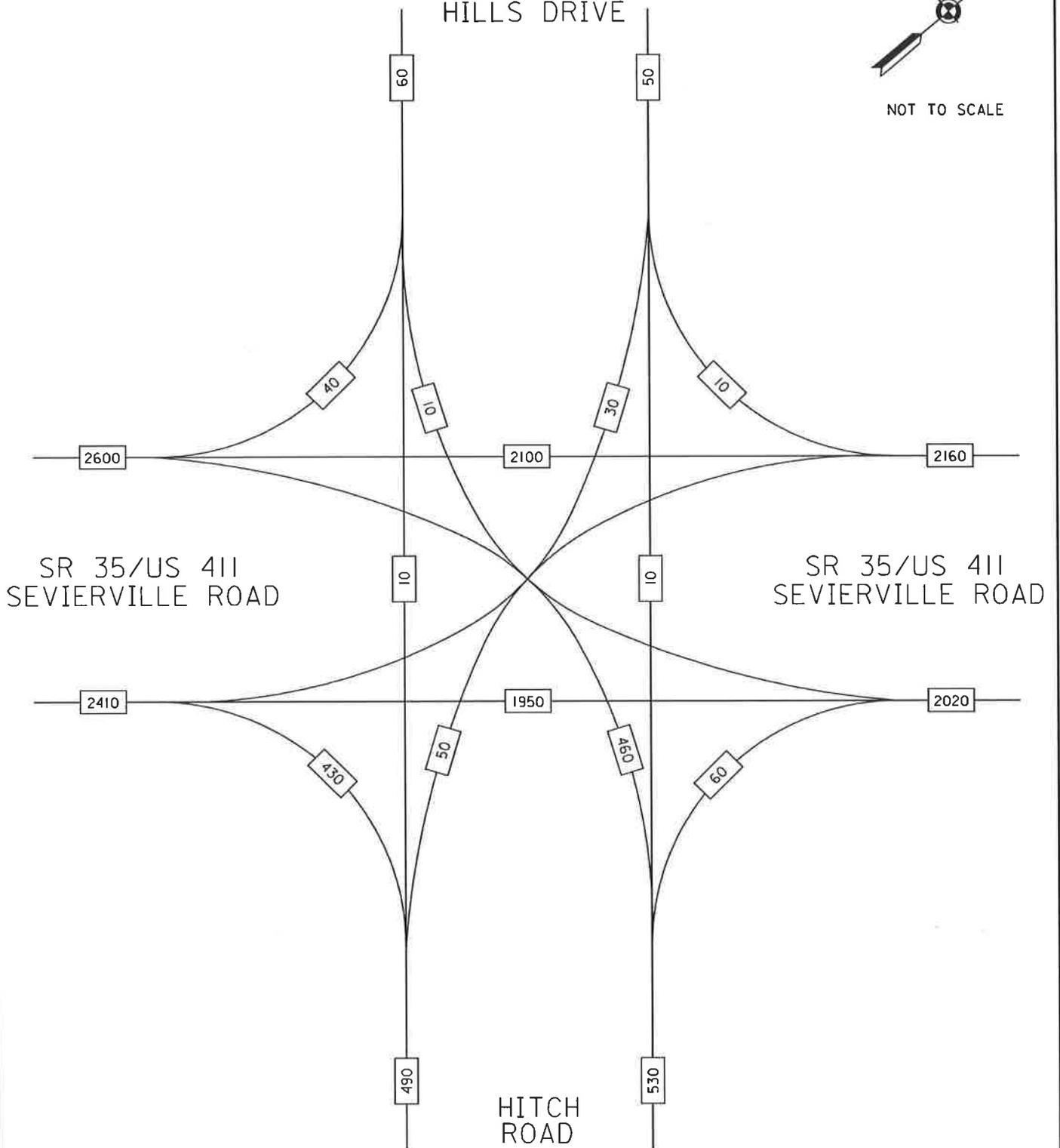
2040 AADT WITH PPE

SR 35/US 411/SEVIERVILLE ROAD @
PEPPERMINT ROAD

PEPPERMINT
HILLS DRIVE

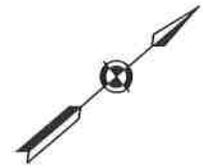


NOT TO SCALE

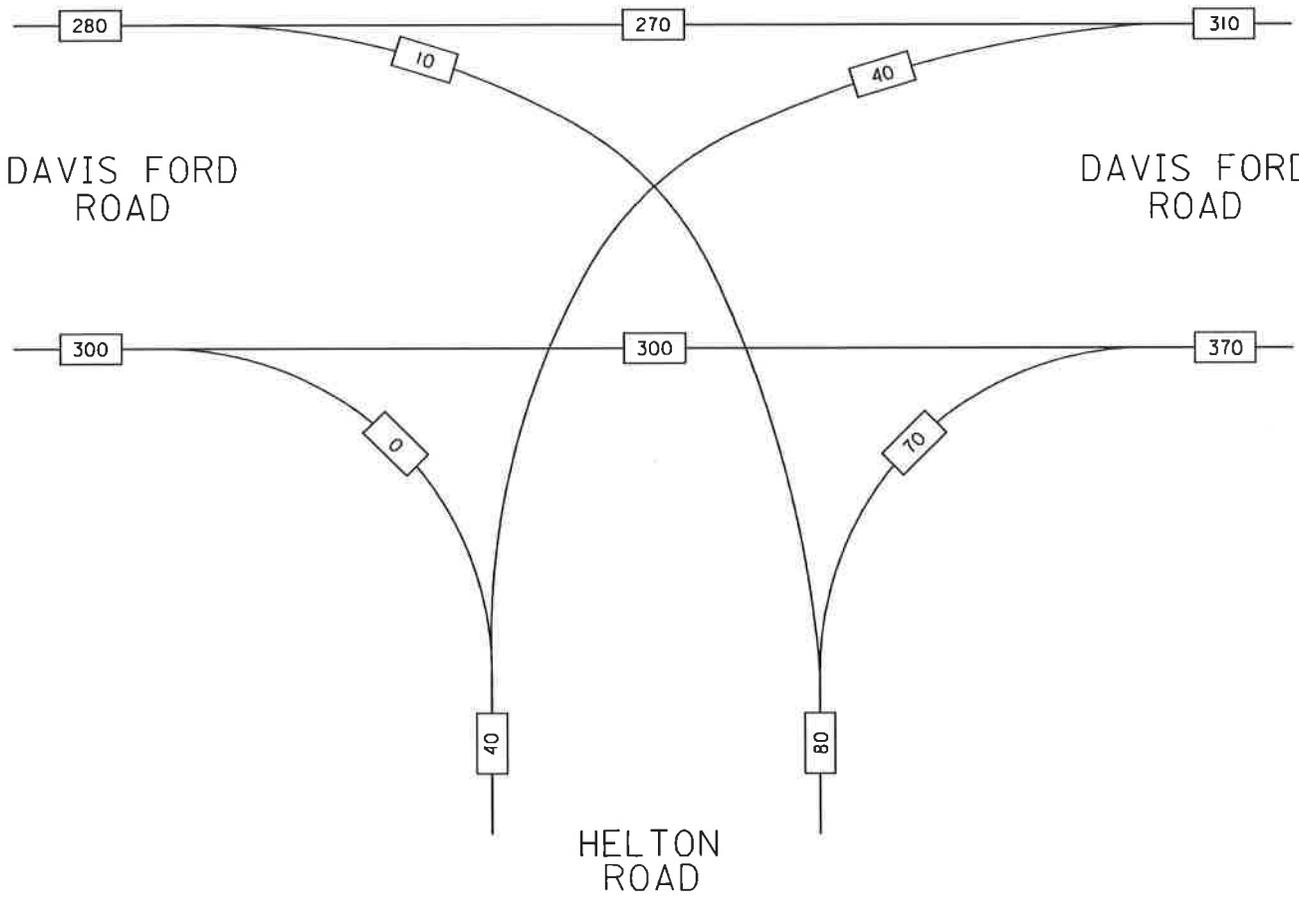


2040 AADT WITH PPE

SR 35/US 411/SEVIERVILLE ROAD @
HITCH ROAD/PEPPERMINT HILLS DR



NOT TO SCALE

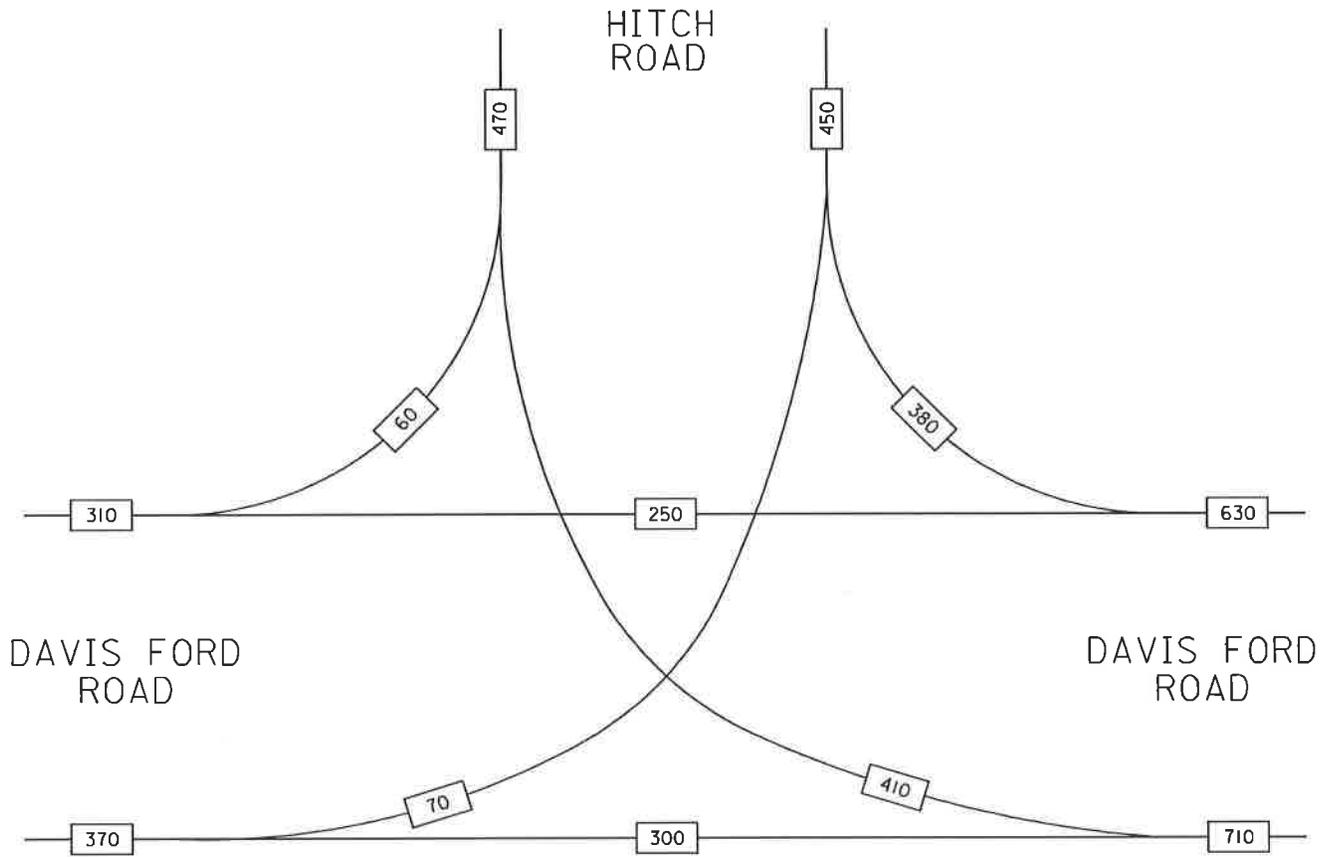


2040 AADT WITH PPE

DAVIS FORD ROAD @
HELTON ROAD



NOT TO SCALE

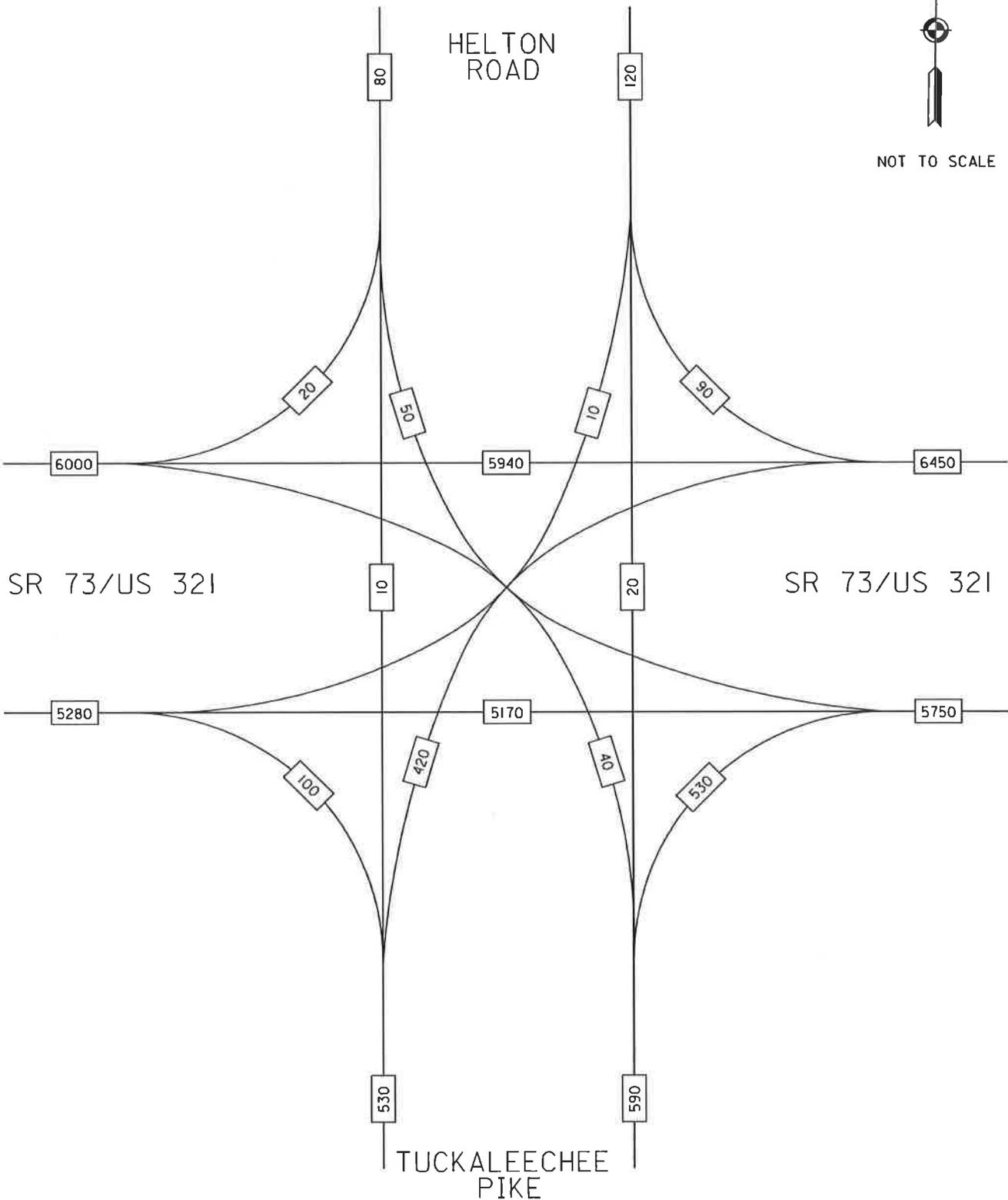


2040 AADT WITH PPE

DAVIS FORD ROAD @
HITCH ROAD



NOT TO SCALE



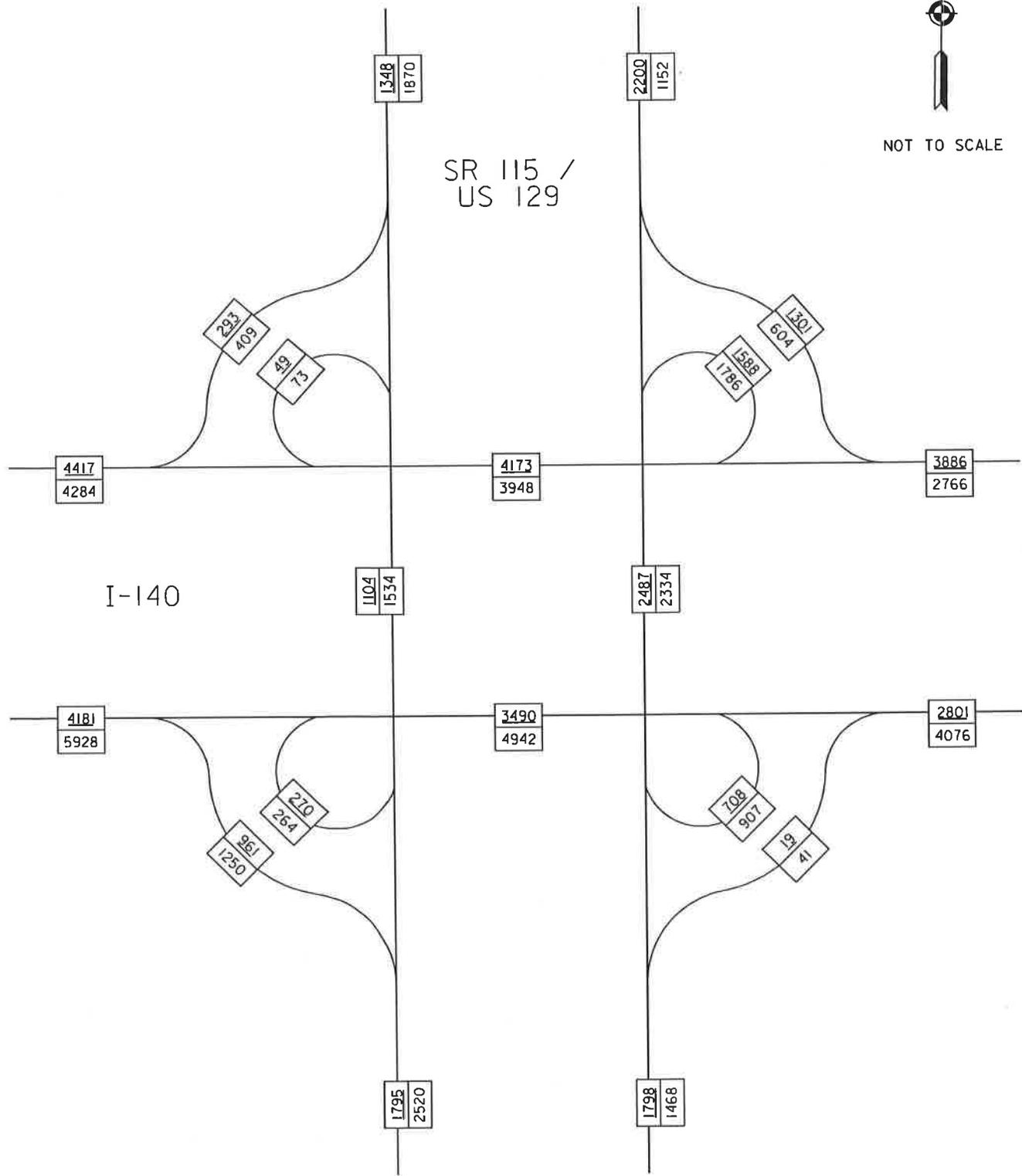
2040 AADT WITH PPE

SR 73/US 321 @
HELTON ROAD/TUCKALEECHEE PIKE



NOT TO SCALE

SR 115 /
US 129

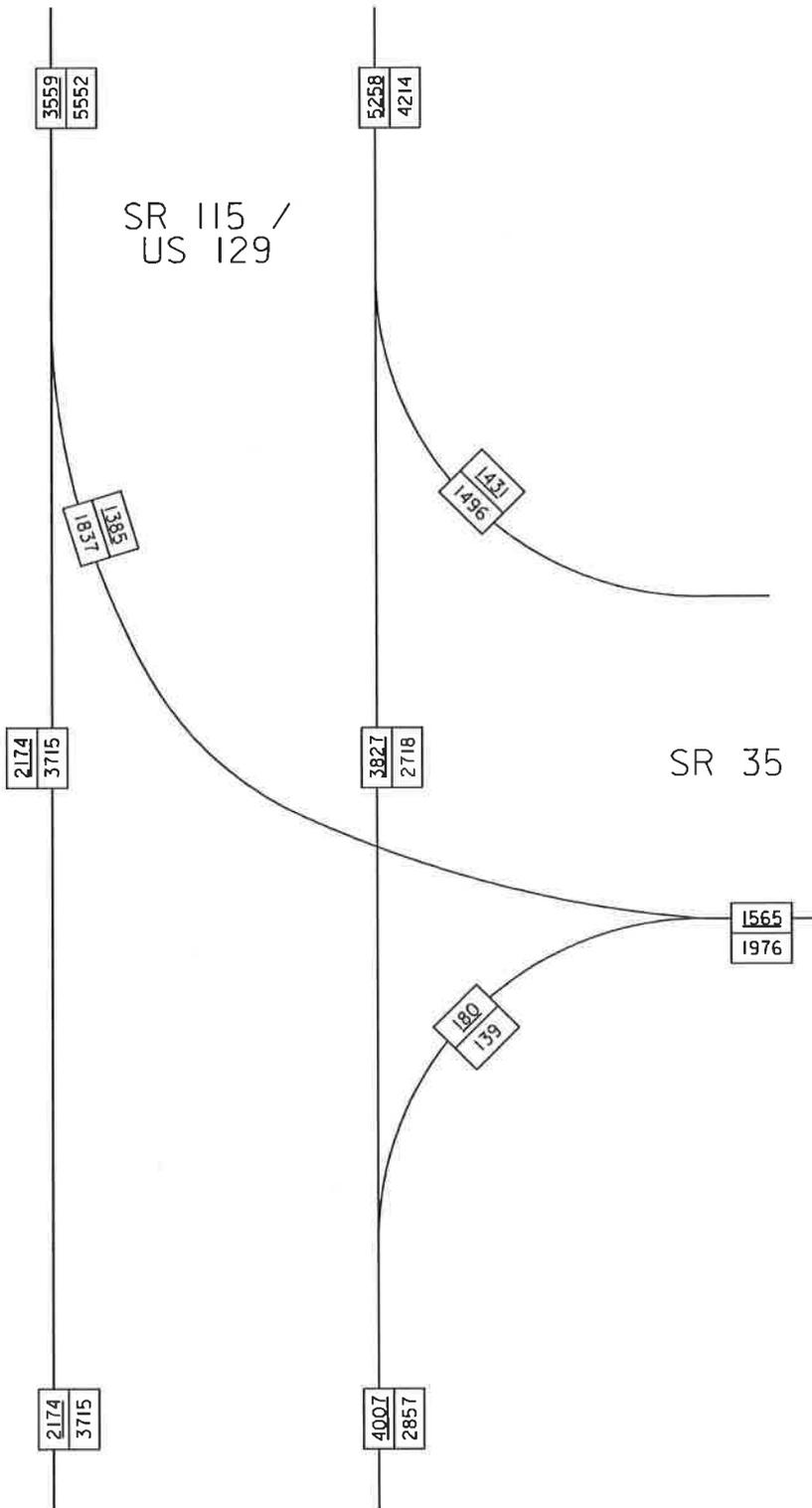


2040 DHV WITH PPE
AM / PM

SR 115/US 129 @
I-140 / PELLISSIPPI PARKWAY



NOT TO SCALE

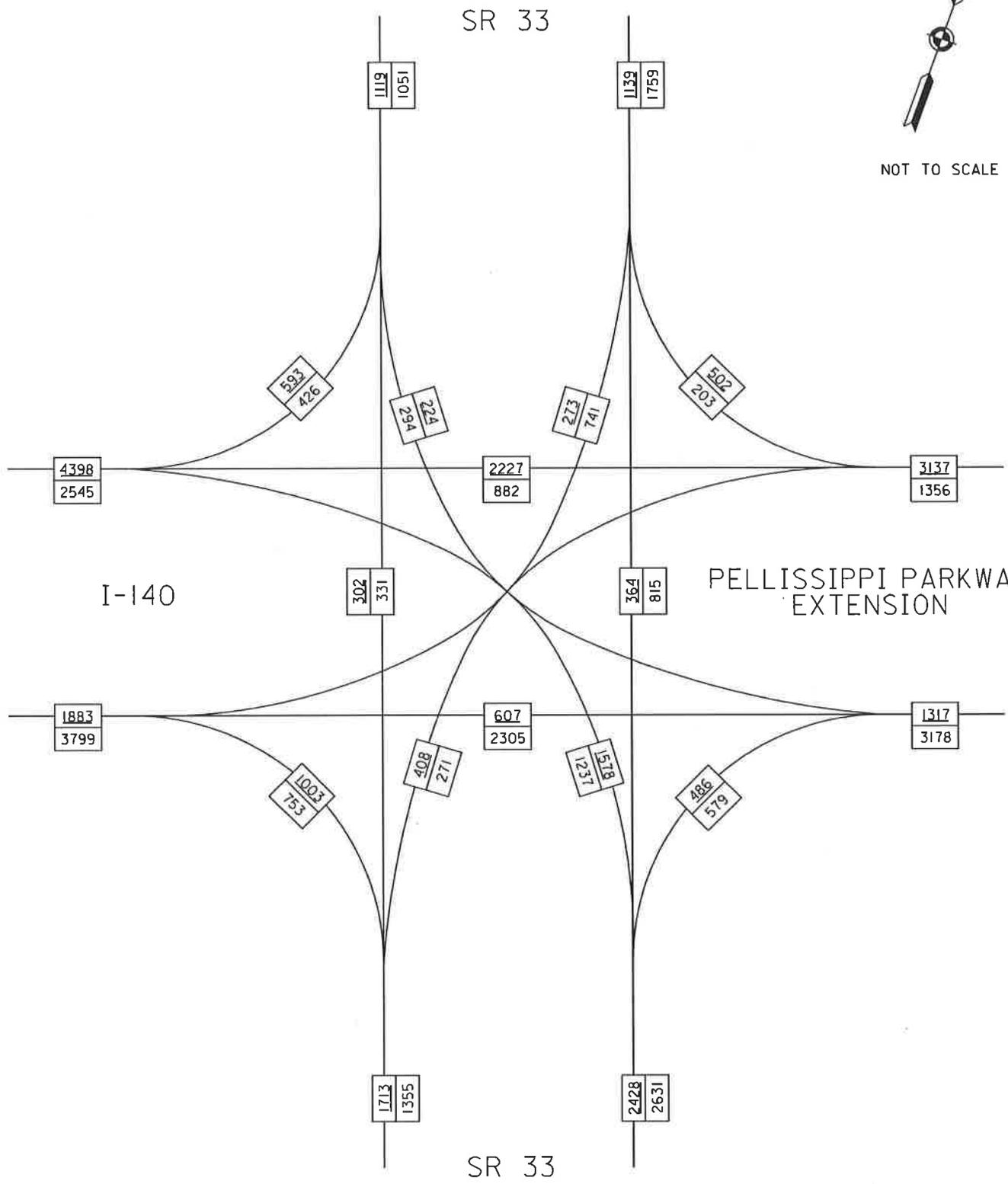


2040 DHV WITH PPE
AM / PM

SR 115/US 129 @ SR 35



NOT TO SCALE

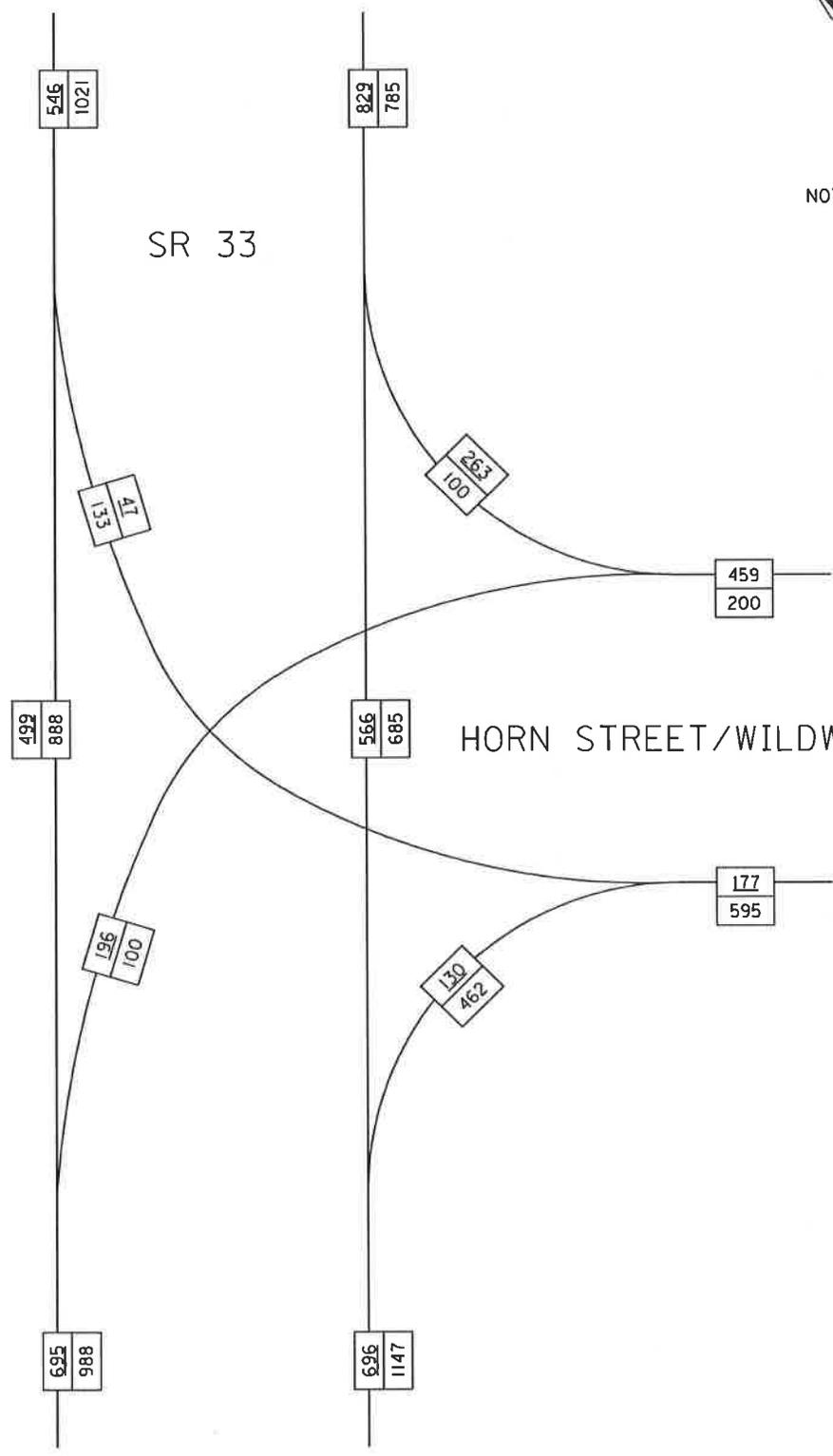


2040 DHV WITH PPE
AM / PM

SR 33 @
I-140 / PELLISSIPPI PKWY EXTENSION



NOT TO SCALE

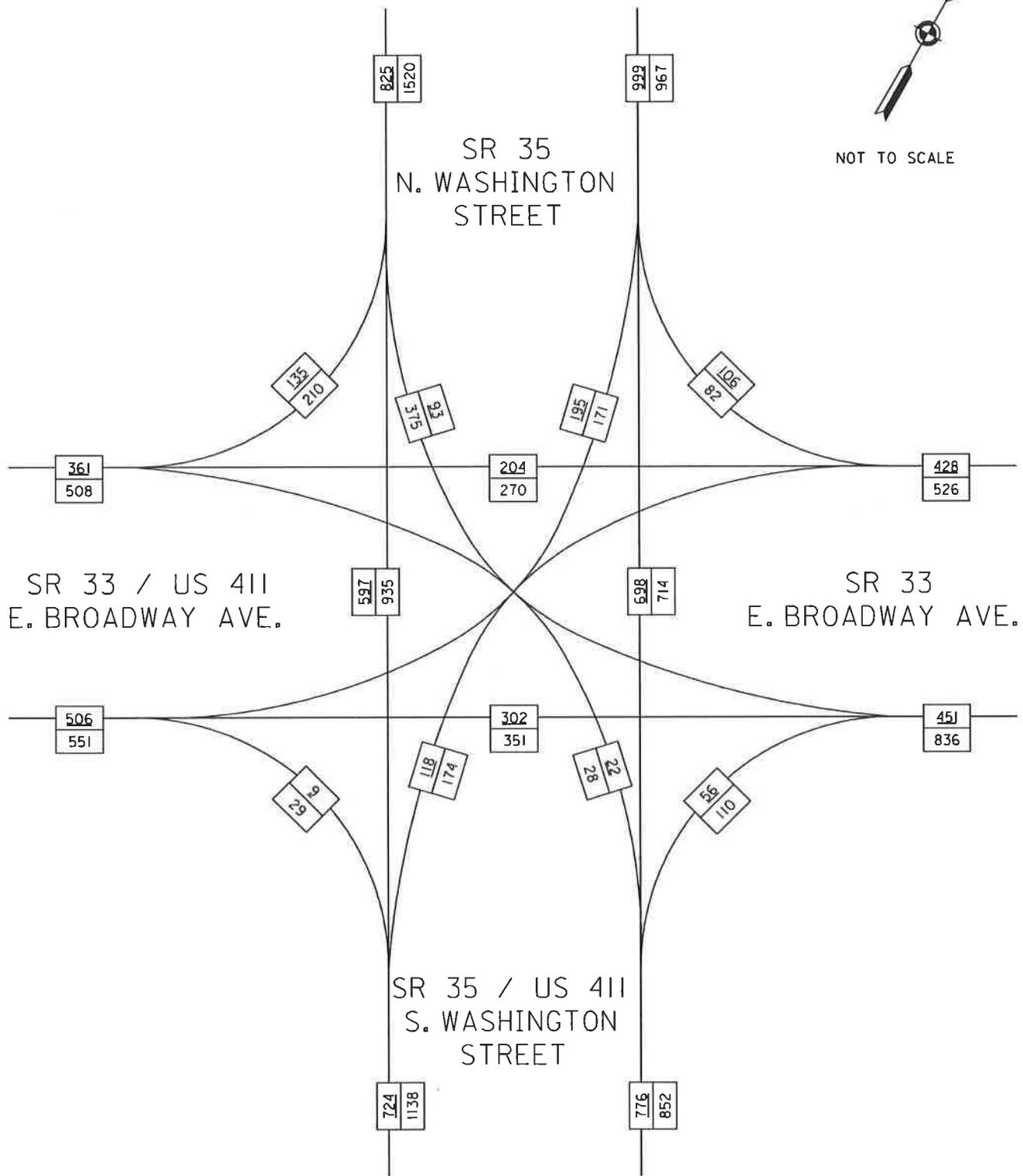


2040 DHV WITH PPE
AM / PM

SR 33 @ HORN STREET /
WILDWOOD ROAD



NOT TO SCALE



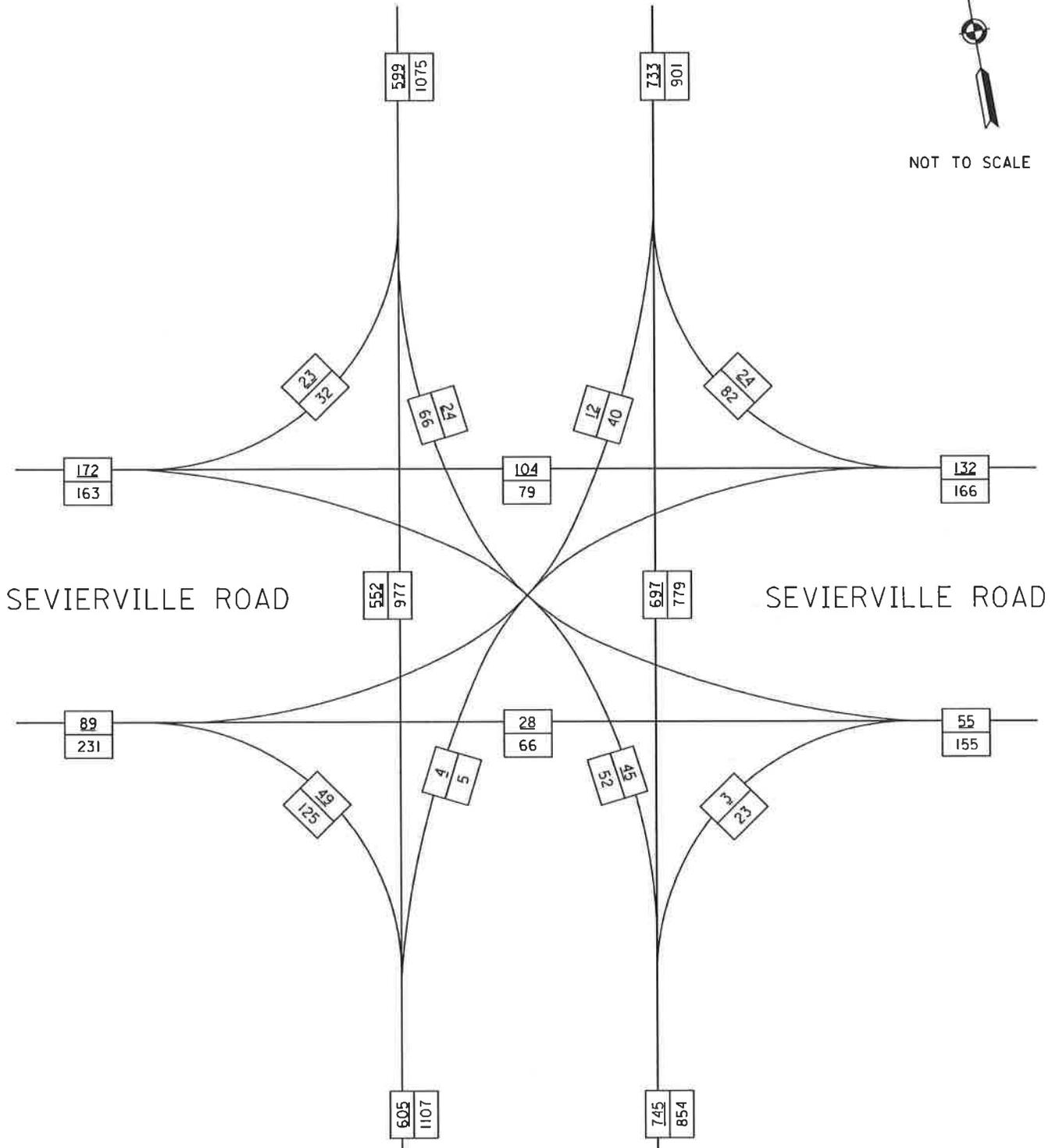
2040 DHV WITH PPE
AM / PM

SR 33 @ SR 35

SR 35/
N. WASHINGTON STREET



NOT TO SCALE



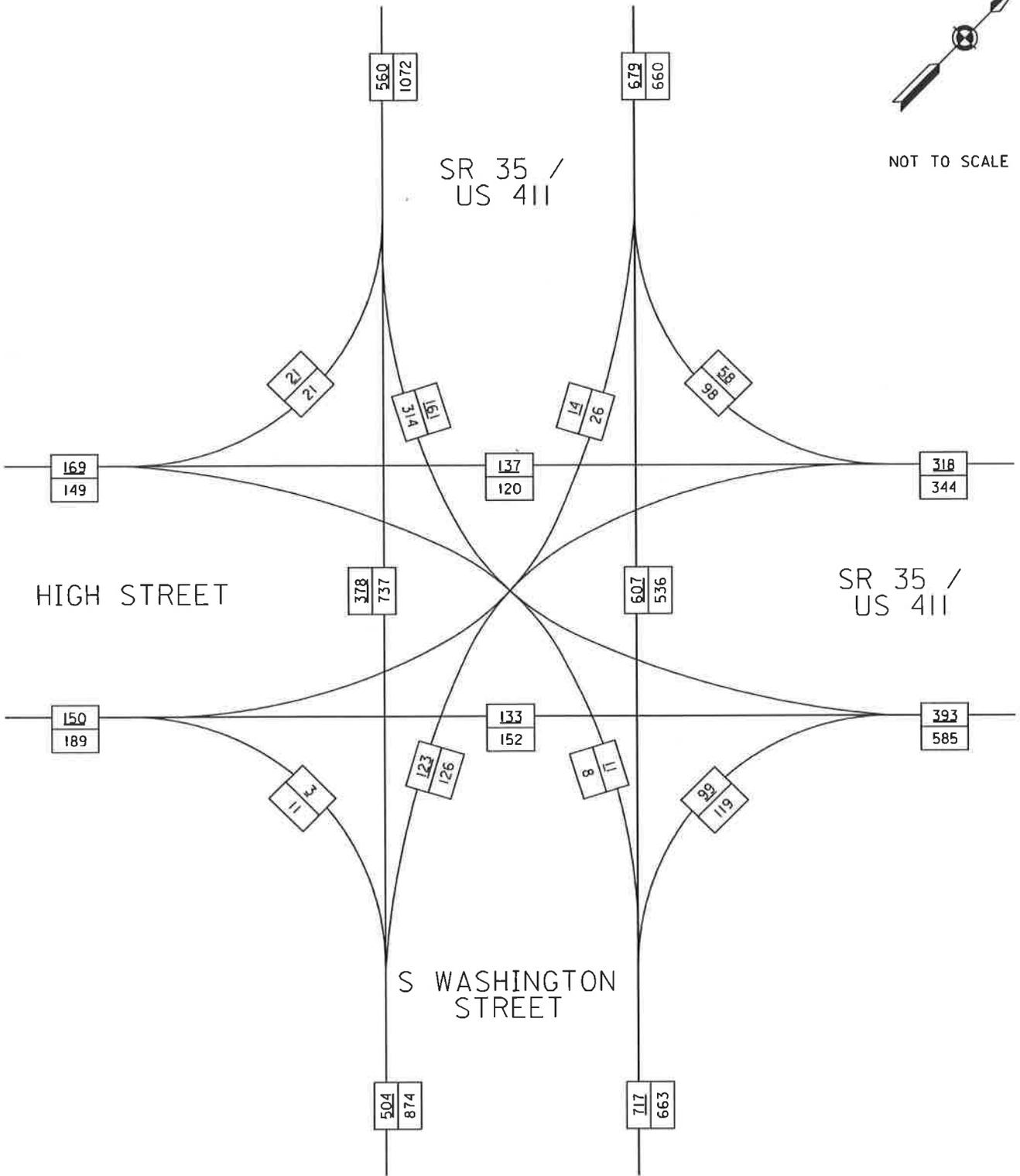
SR 35/US 411
S. WASHINGTON STREET

2040 DHV WITH PPE
AM / PM

SEVIERVILLE ROAD @
SR 35/WASHINGTON STREET



NOT TO SCALE

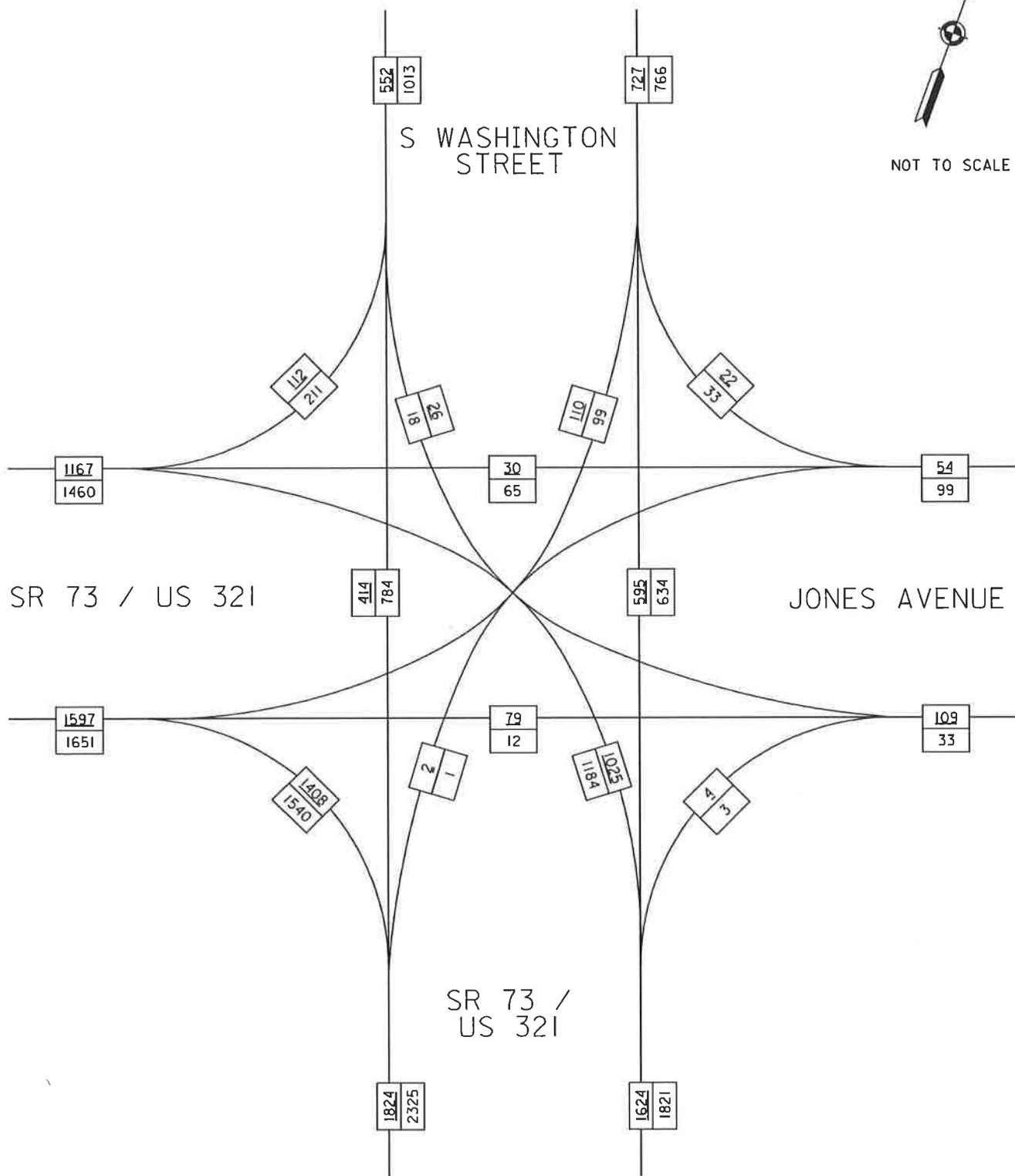


2040 DHV WITH PPE
AM / PM

S WASHINGTON ST / SR 35
@ HIGH ST / SR 35



NOT TO SCALE



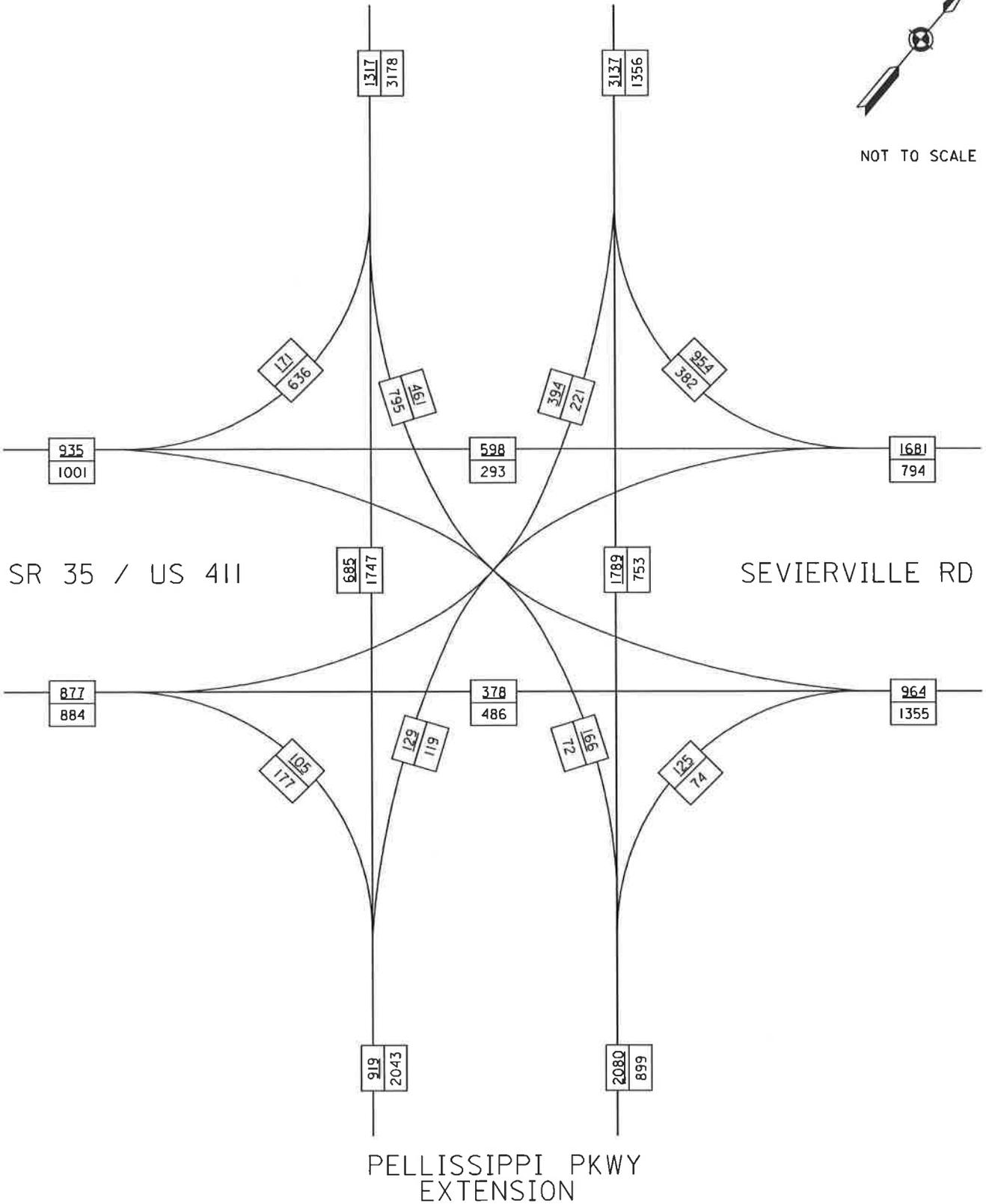
2040 DHV WITH PPE
AM / PM

S WASHINGTON ST
@ SR 73/ US 321

PELLISSIPPI PKWY
EXTENSION



NOT TO SCALE



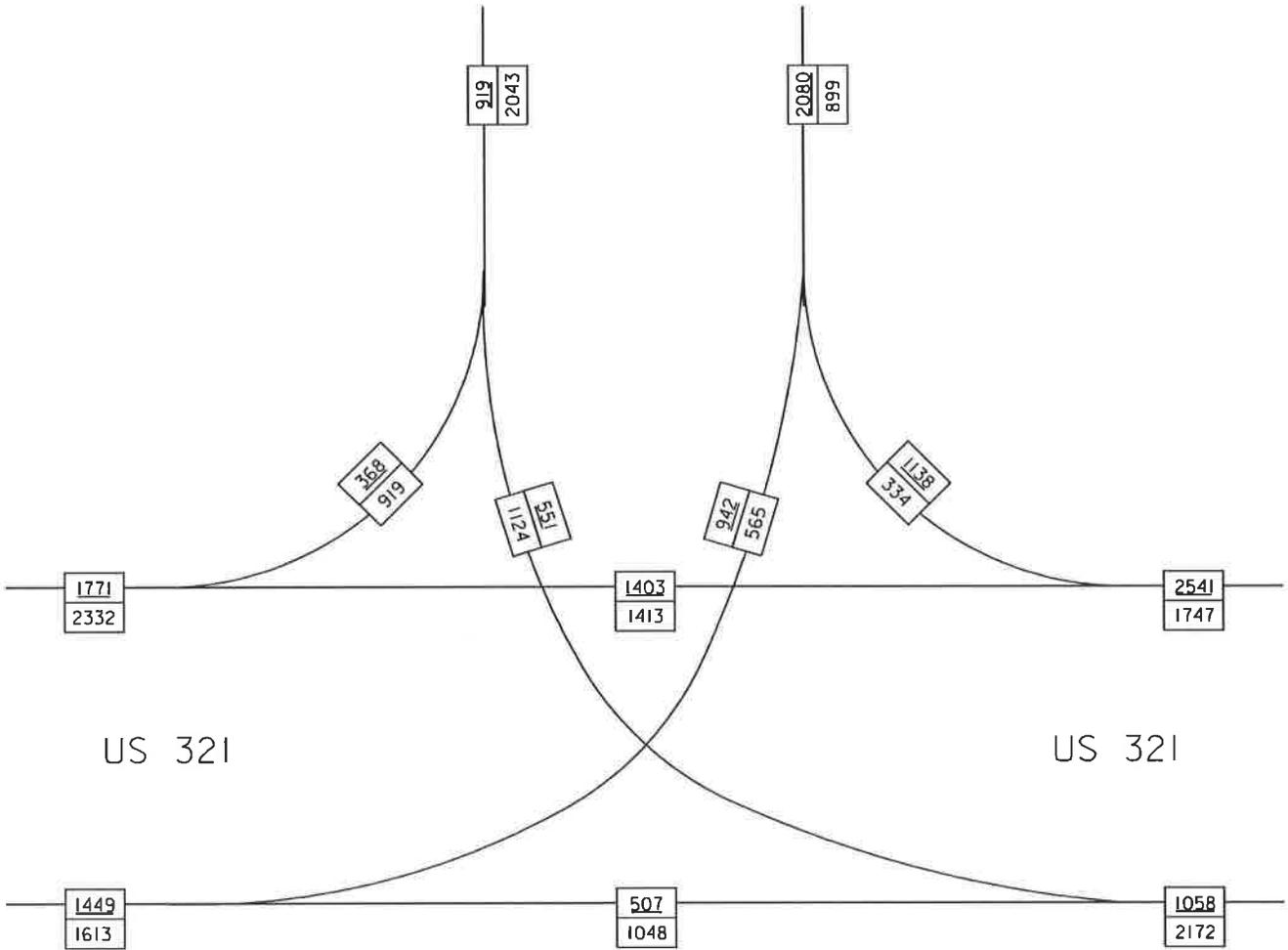
2040 DHV WITH PPE
AM / PM

PELLISSIPPI PKWY EXTENSION @
SR 35 / US 411 / SEVIERVILLE RD



NOT TO SCALE

PELLISSIPPI PKWY EXTENSION



US 321

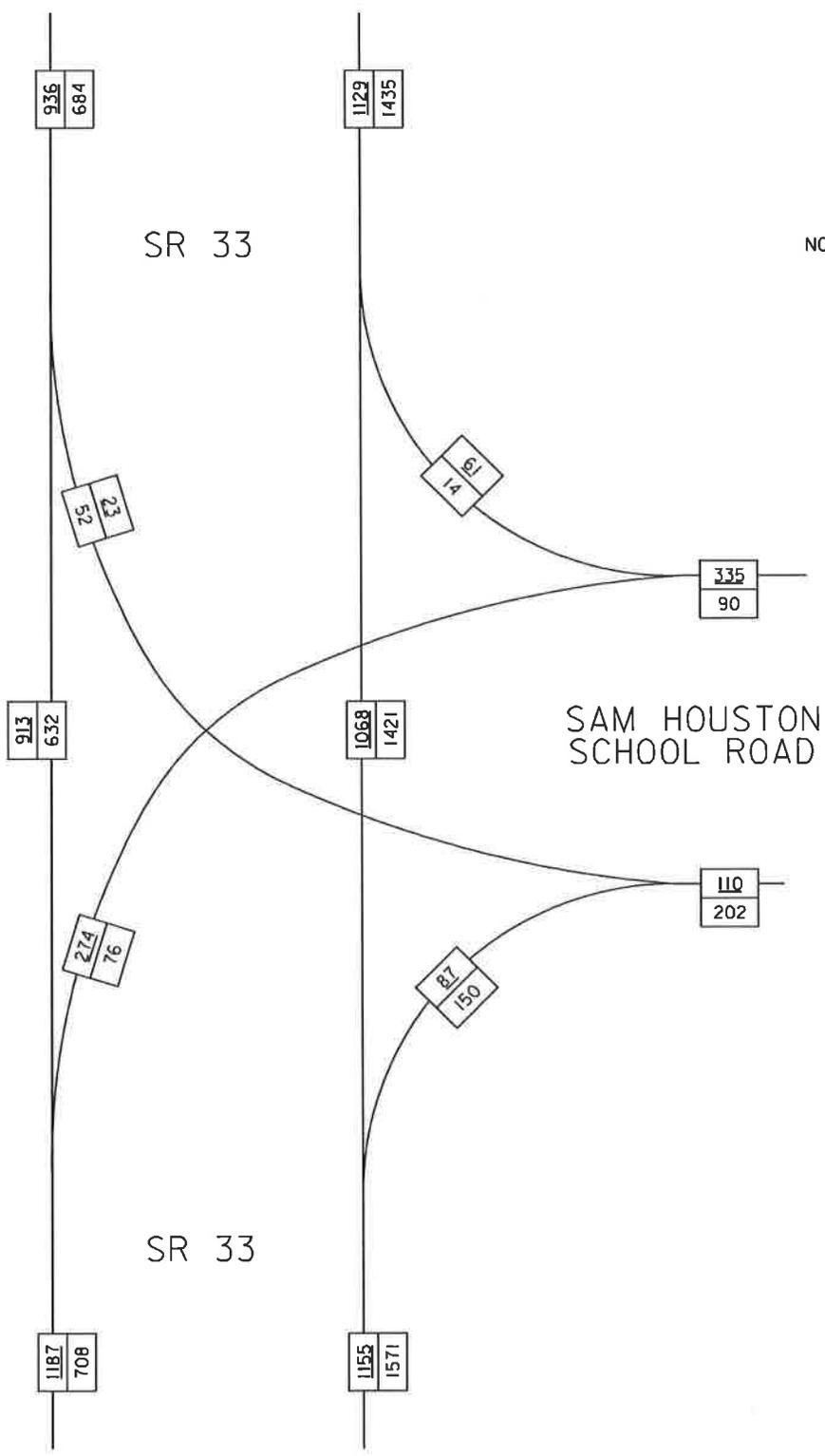
US 321

2040 DHV WITH PPE
AM / PM

PELLISSIPPI PKWY EXTENSION @
US 321



NOT TO SCALE

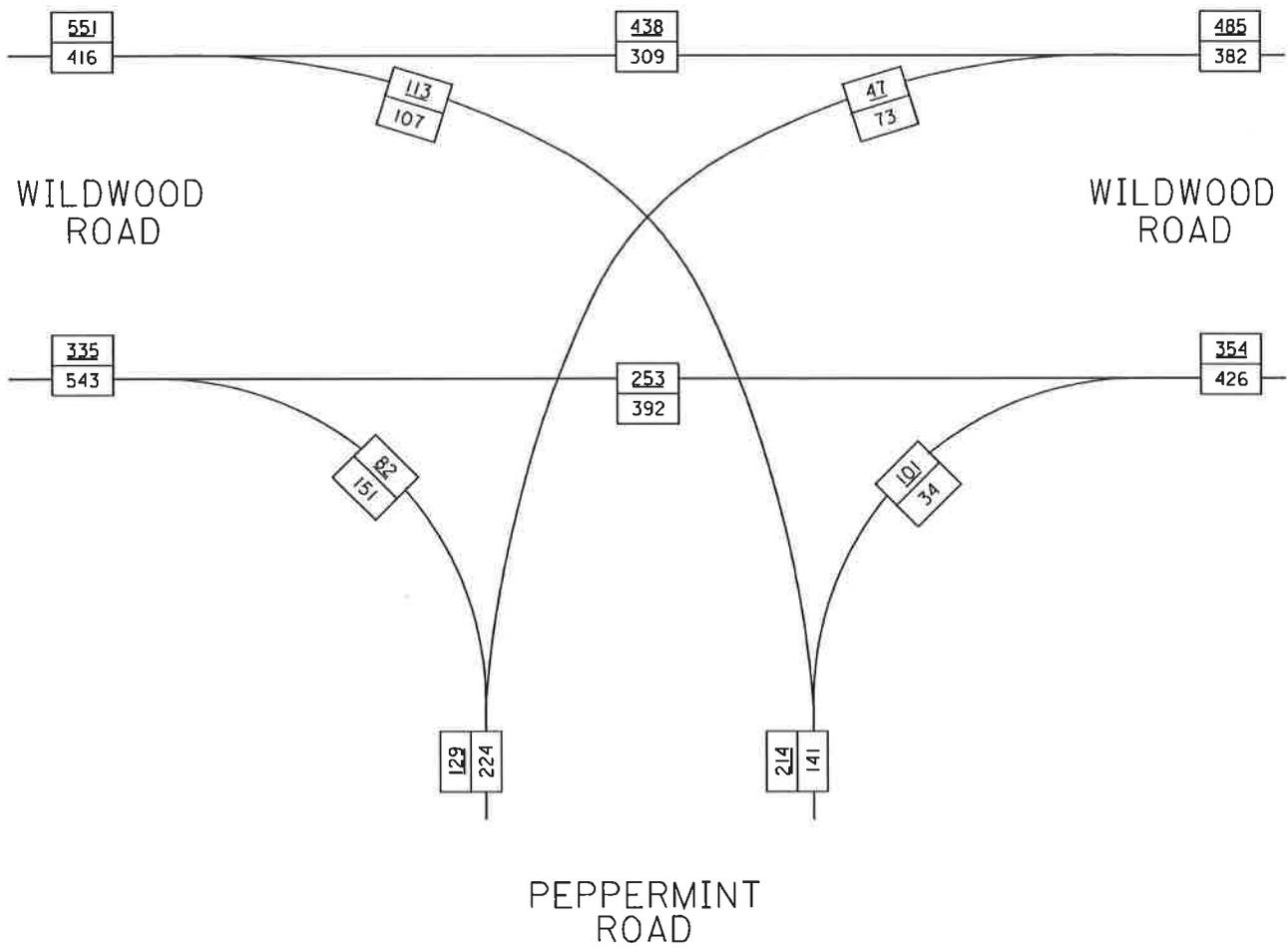


2040 DHV WITH PPE
AM / PM

SR 33 @
SAM HOUSTON SCHOOL ROAD



NOT TO SCALE



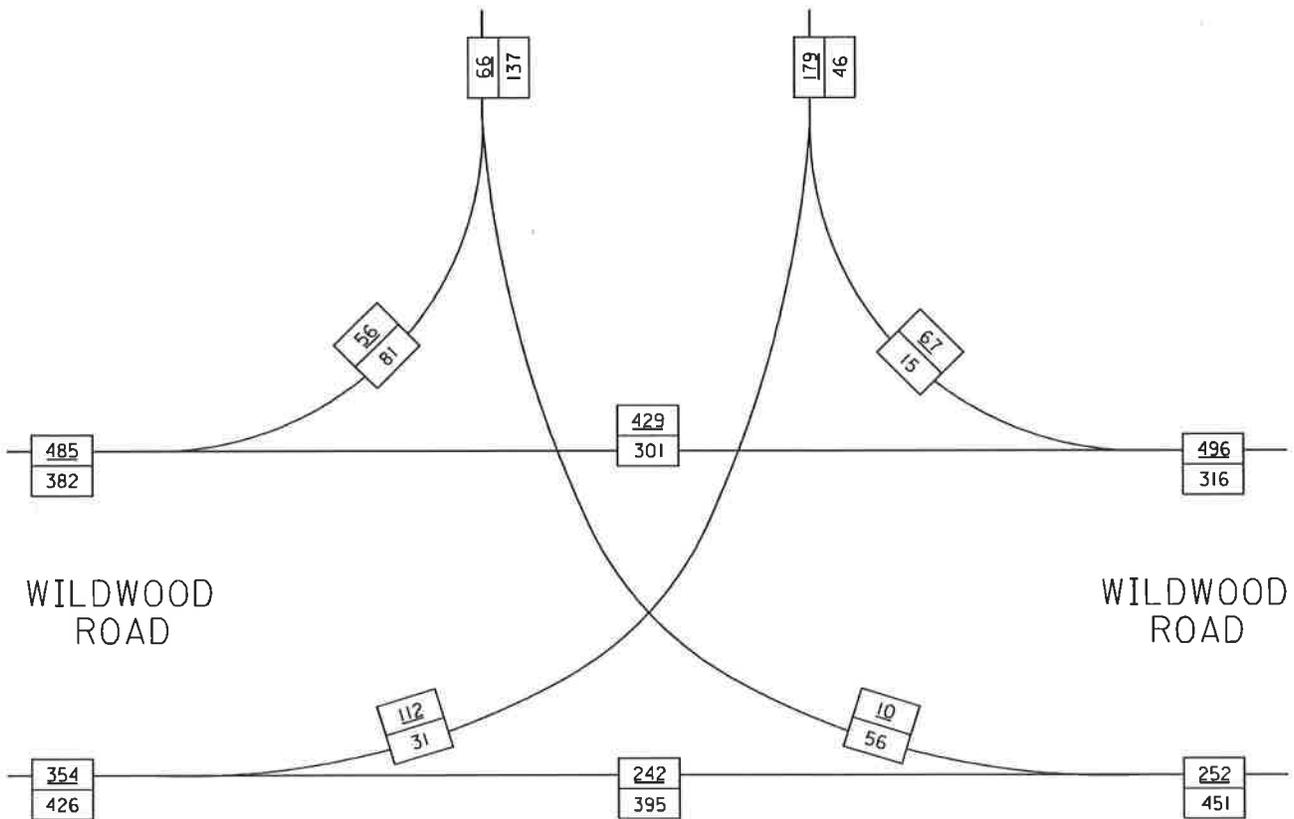
2040 DHV WITH PPE
AM / PM

PEPPERMINT ROAD @
WILDWOOD ROAD



NOT TO SCALE

SAM HOUSTON SCHOOL ROAD



WILDWOOD ROAD

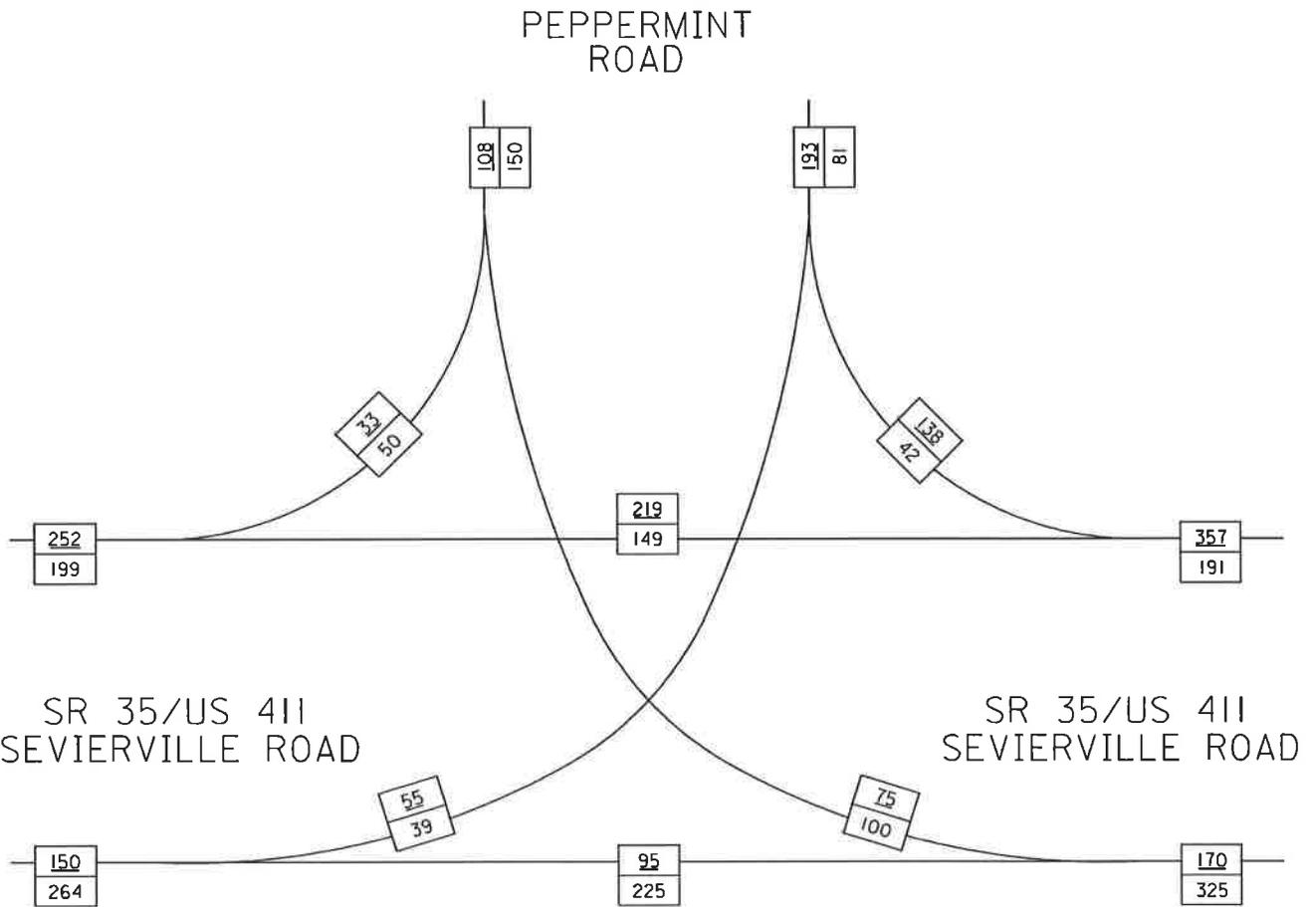
WILDWOOD ROAD

2040 DHV WITH PPE
AM / PM

SAM HOUSTON SCHOOL ROAD @
WILDWOOD ROAD



NOT TO SCALE



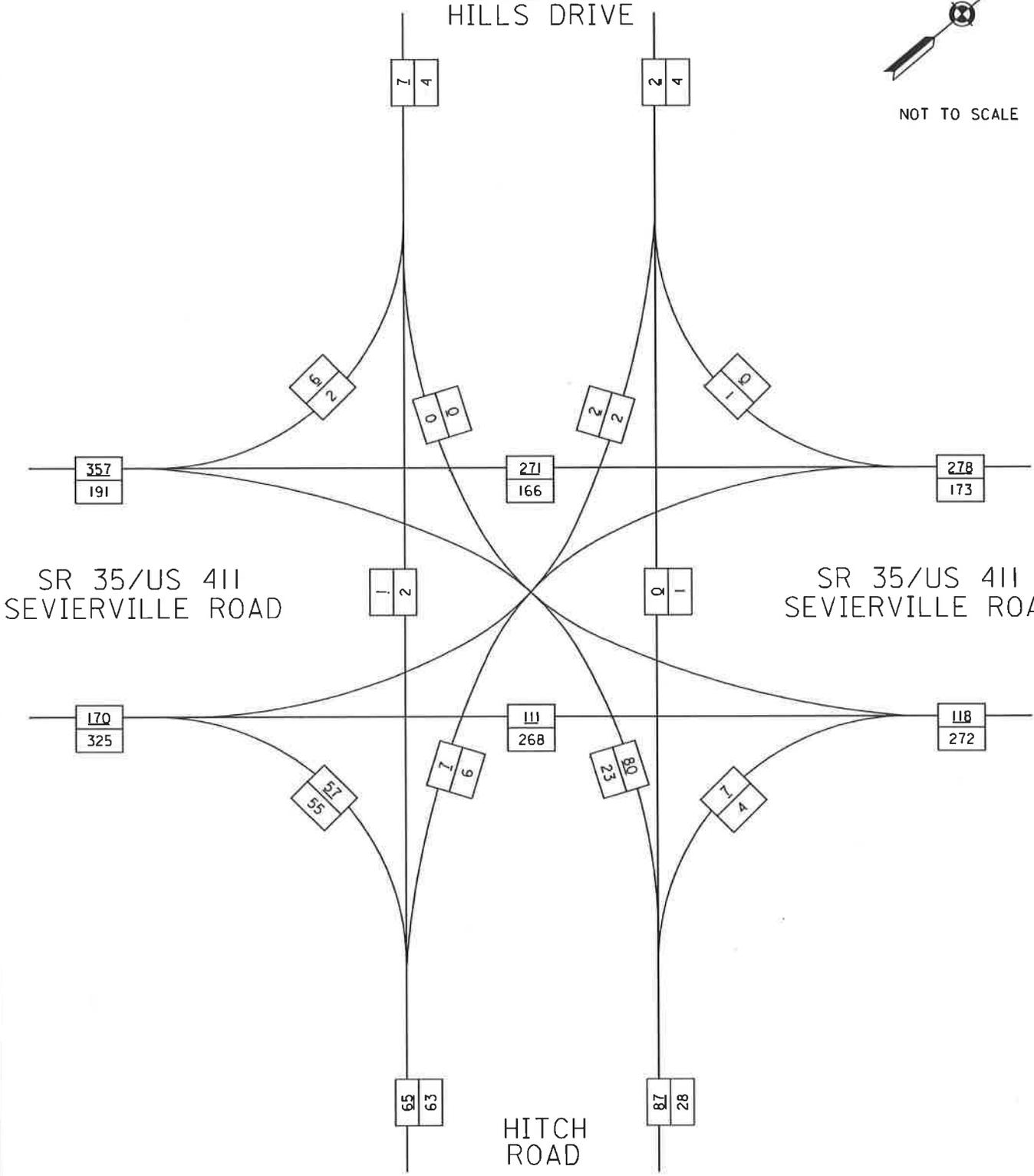
2040 DHV WITH PPE
AM / PM

SR 35/US 411/SEVIERVILLE ROAD @
PEPPERMINT ROAD

PEPPERMINT HILLS DRIVE



NOT TO SCALE

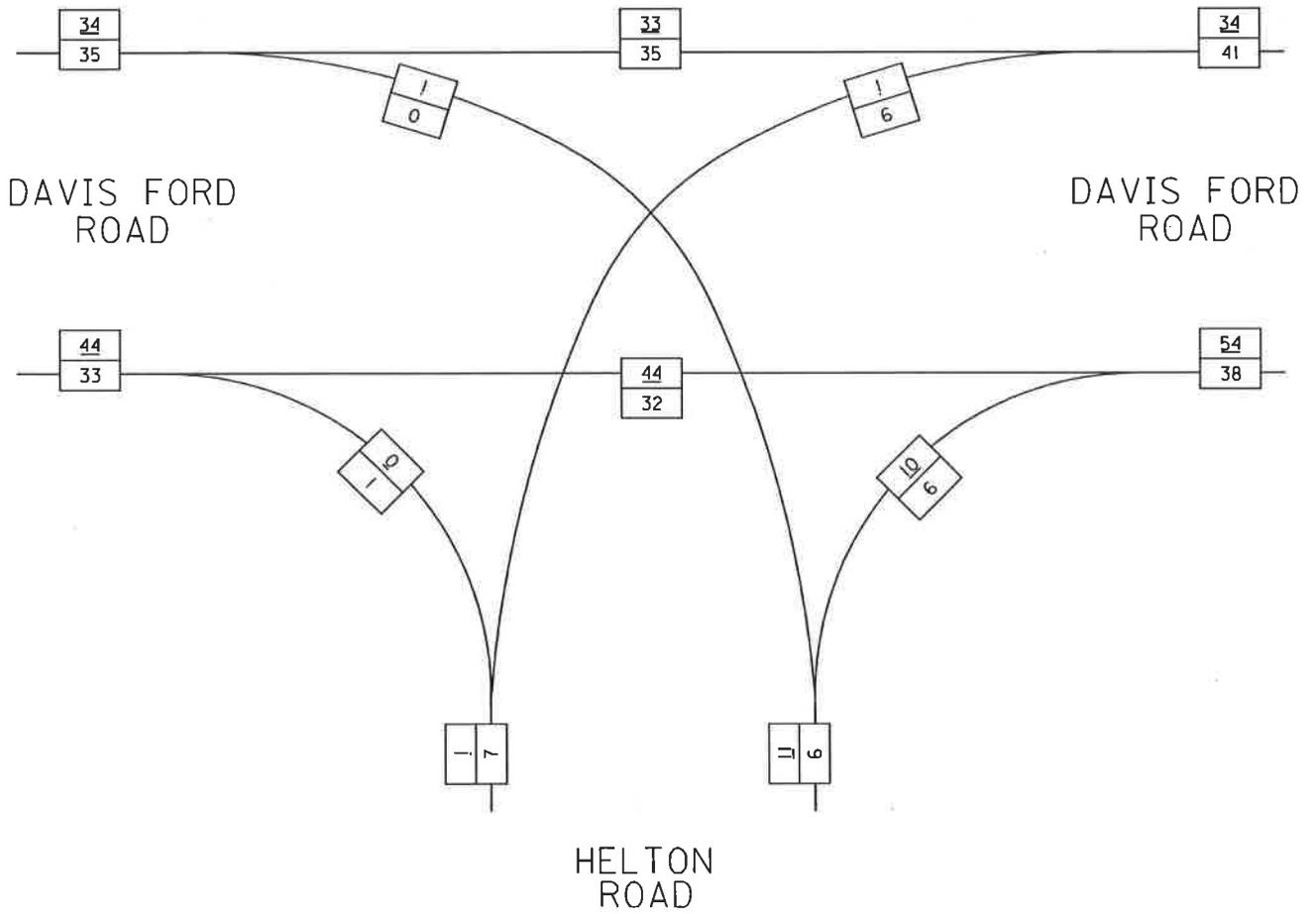


2040 DHV WITH PPE
AM / PM

SR 35/US 411/SEVIERVILLE ROAD @
HITCH ROAD/PEPPERMINT HILLS DR



NOT TO SCALE

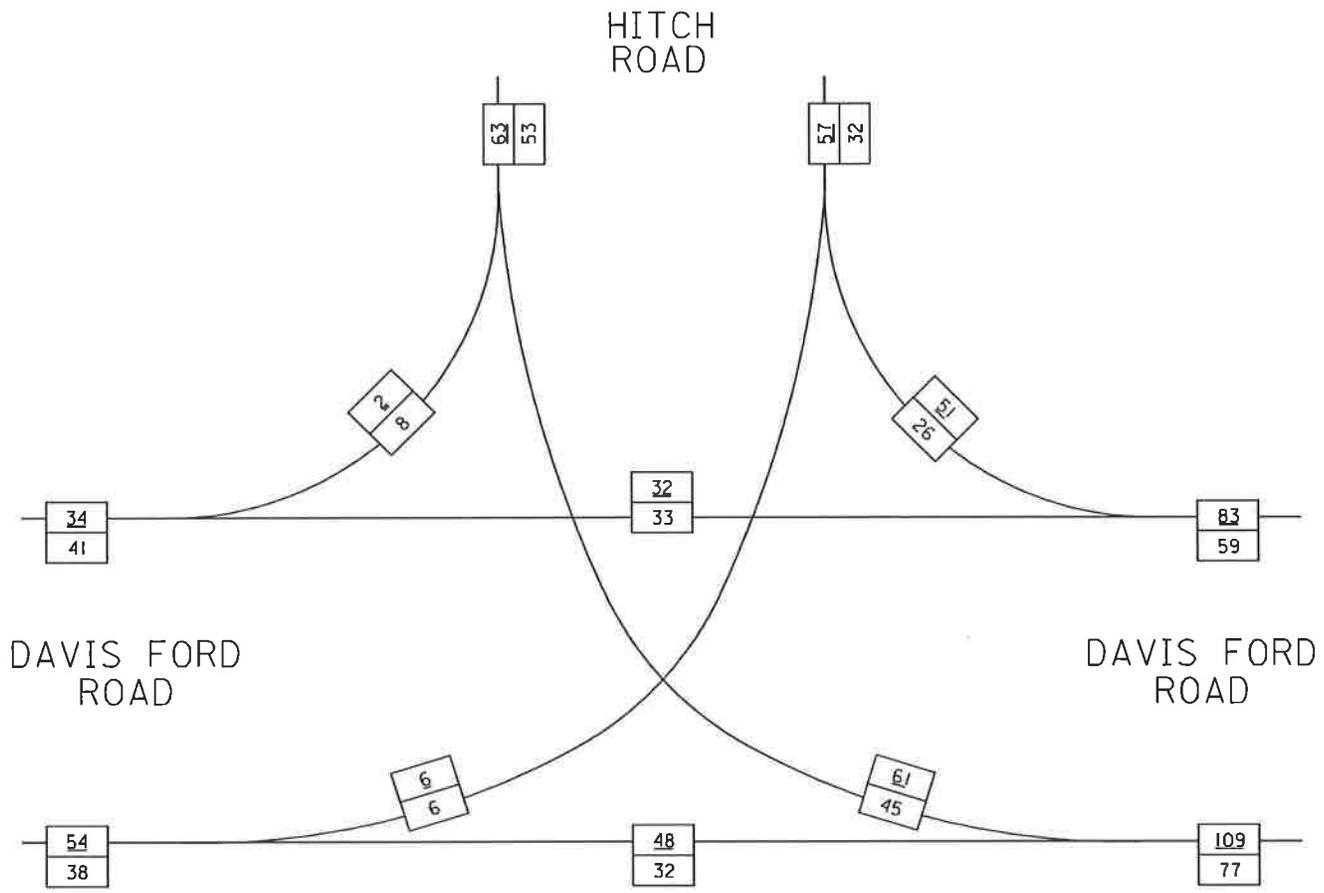


2040 DHV WITH PPE
AM / PM

DAVIS FORD ROAD @
HELTON ROAD



NOT TO SCALE

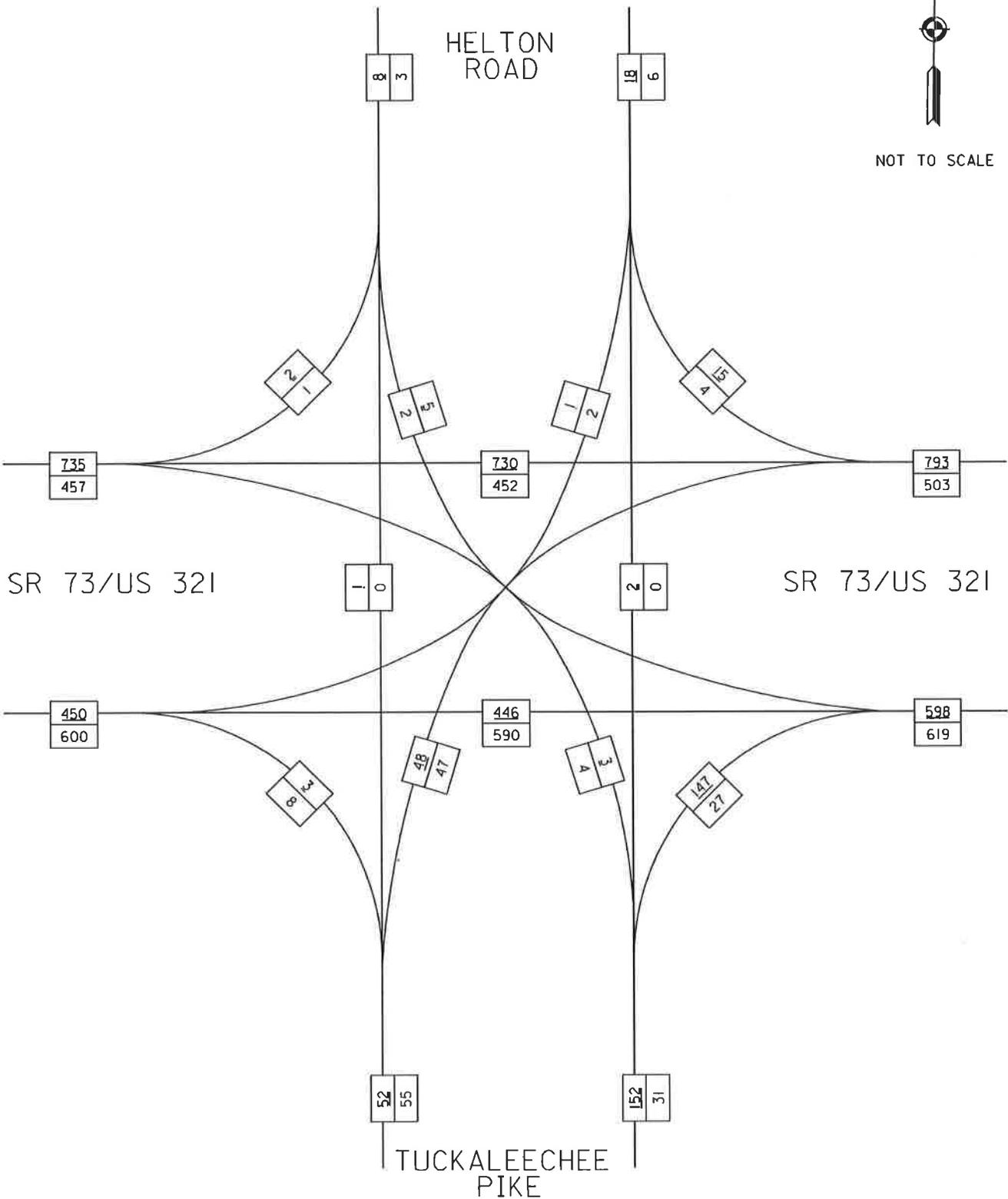


2040 DHV WITH PPE
AM / PM

DAVIS FORD ROAD @
HITCH ROAD



NOT TO SCALE



2040 DHV WITH PPE
AM / PM

SR 73/US 321 @
HELTON ROAD/TUCKALEECHEE PIKE

SR 162 (PELLISSIPPI PARKWAY EXTENSION)

ADDENDUM TO THE TRAFFIC OPERATIONS TECHNICAL REPORT

**BLOUNT COUNTY, TENNESSEE
P.I.N. 101423.00**

Prepared for:

Tennessee Department of Transportation



Prepared by:

PB Americas, Inc.

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June 30, 2011 (minor corrections September 7, 2011)

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LIST OF ACRONYMS

AASHTO – American Association of State Highway and Transportation Officials
EIS – Environmental Impact Statement
FHWA – Federal Highway Administration
HCM – Highway Capacity Manual
HCS+ – Highway Capacity Software Plus
LOS – Level of Service
NEPA – National Environmental Policy Act
RAH – Relocated Alcoa Highway
TDOT – Tennessee Department of Transportation
TRIMS – Tennessee Roadway Information Management System

1.0 INTRODUCTION

The Tennessee Department of Transportation (TDOT), in cooperation with the Federal Highway Administration (FHWA), is proposing to extend and construct Pellissippi Parkway (Interstate 140 or I-140) from its current terminus at State Route (SR) 33 (Old Knoxville Highway) to SR 73 (US 321 or Lamar Alexander Highway) in Blount County.

Overall, the purpose of this project is to develop and implement a transportation solution in the northern portion of Blount County, east of Alcoa and Maryville that would:

- Enhance regional transportation system linkages;
- Improve circumferential mobility by providing travel options to the existing radial roadway network in Blount County, Maryville, and Alcoa;
- Enhance roadway safety on the roadway network, including the Maryville core; and
- Assist in achieving acceptable traffic operations on the transportation network or not adversely affect traffic flows on the existing transportation network.

TDOT and FHWA have prepared a Draft Environmental Impact Statement (DEIS) in accordance with the National Environmental Policy Act (NEPA) to identify and evaluate the environmental effects of the proposed project and to identify measures to minimize impacts. During the preparation of the DEIS, a traffic operations technical study was prepared in October 2008. The results of this technical study were incorporated into Chapters 1 and 3 of the DEIS.

Following approval of the DEIS in April 2010, the review period began for agencies and the public. Comments have been received from a number of sources including agencies, the general public, Citizens Against the Pellissippi Parkway Extension, Inc. (CAPPE), City of Alcoa, and the Knoxville Regional Transportation Planning Organization (TPO).

This document serves as an addendum to the original Traffic Operations Technical Report and includes updates resulting from public and agency comments provided during the DEIS review period. Overall, the updates seek to provide clarification on the traffic volumes used in the analysis, and more specific level of improvement resulting from the build alternatives.

The alternatives evaluated remain the same and are as follows:

- No-Build Alternative
- Build Alternative
 - Alternative A (Extend Pellissippi Parkway to US 321)
 - Alternative C (Extend Pellissippi Parkway to US 321)
 - Alternative D (Upgrade Two-Lane Network)

For more detail on each alternative refer to the original Traffic Operations Technical Report or the DEIS.

The following sections provide the updated analysis for each of these alternatives.

2.0 ANALYSIS OF ALTERNATIVES

For the proposed Pellissippi Parkway Extension from SR 33 to US 321, an initial assessment in level of service was conducted in 2007 assuming a generic corridor for a four-lane highway concept that was included in the Knoxville Regional Travel Demand Model. Since the initial assessment, two four-lane build alternatives have been identified and refined (Alternatives A and C). The Knoxville Regional Travel Demand Model was evaluated to determine if the location of these alternatives would result in significant differences in estimated volumes such that specific traffic volumes would need to be developed for each alternative. It was determined that the model is not sensitive enough to determine differences in the two four-lane build alternatives, and as such, the existing traffic volumes generated for the generic corridor are assumed for each of the four-lane build alternatives. Therefore, the levels of service for the four-lane extension of Pellissippi Parkway (both corridor and intersection) presented in this report are assumed to apply for both Alternatives A and C (labeled as Alternatives A/C). Under the Alternatives A and C scenario, traffic throughout the rest of the study area was projected through use of the Knoxville Regional Travel Demand Model.

Alternative D (upgrade of existing 2-lane roadway network) was identified and developed in early 2008, based on comments received during the October 2007 and February 2008 public meetings. Portions of the Alternative D corridor would involve new alignment, but this option would primarily follow the existing roads: Sam Houston School Road, Peppermint Road, Hitch Road and Helton Road. Levels of service must be determined for these roadways in order to compare Alternative D directly with the other alternatives. This analysis included an existing conditions analysis as well as traffic forecasts for the future years of 2015 and 2035.

Since the existing routes that form part of Alternative D are not state-maintained routes, TDOT has little to no traffic count information available, nor do the local municipalities. To obtain the needed existing traffic volumes, TDOT conducted five (5) 48-hour tube counts in August 2008. Counts were conducted at the following locations:

- Sam Houston School Road – near SR 33
- Sam Houston School Road – near Wildwood Road
- Peppermint Road – near the mid-point between Wildwood Road and US 411
- Hitch Road – just south of US 411
- Helton Road – south of Centennial Church Road

These counts provided the existing year (2008) LOS for a frame of reference. For the future years of 2015 and 2035, this alternative was coded into the Knoxville Regional Travel Demand Model. The model years were 2014 and 2030. Based on the methodology for the previous traffic forecasts for the No-Build and four-lane build alternative (Alternative A/C), and given the absence of historic traffic growth data, growth rate factors were derived from the model output. These factors were then applied to the model volumes to determine future year volumes of 2015 and 2035. Future year LOS (2015 and 2035) was not initially calculated for Sam Houston School Road, Peppermint Road, Hitch Road, and Helton Road since traffic forecasts were not originally prepared for these roadways.

During the public review period for the DEIS, several review comments related to the approach to the traffic operations analysis of the Build Alternatives. The concern was that the DEIS did not provide sufficient traffic data to understand one of the alternatives (Alternative D). Based on these comments received, TDOT determined that more detailed traffic forecasts would be prepared for Alternative D to the same level as Alternatives A and C and these revised forecasts should include the data necessary to calculate the levels of service. TDOT has now conducted a detailed traffic analysis for Alternative D and the study area network that would be served by Alternative D, which is reported in this addendum.

Also following the review period for the DEIS, some minor changes were proposed by the Knoxville TPO and the City of Alcoa related to the traffic volumes and truck percentages along US 129. The primary focus of changes included:

- Modified forecasted volumes for the No-Build scenario for the segment of US 129 north of US 321 as the base volume from the regional travel demand model was reported incorrectly.
- For clarification, added forecasted volumes and truck percentage for the segment of US 129 between SR 35 and Louisville Road.
- For clarification, added forecasted volumes and truck percentage for the segment of US 129 between Relocated Alcoa Highway and SR 335.

For additional information related to these changes, refer to the memorandum dated October 7, 2010 prepared by Sain Associates, contained in Appendix A.

The revised traffic volumes and truck percentages resulting from the additional analysis are shown on the following figures (**Figure 1 - Figure 3**).

Figure 1: No-Build Forecasted AADT

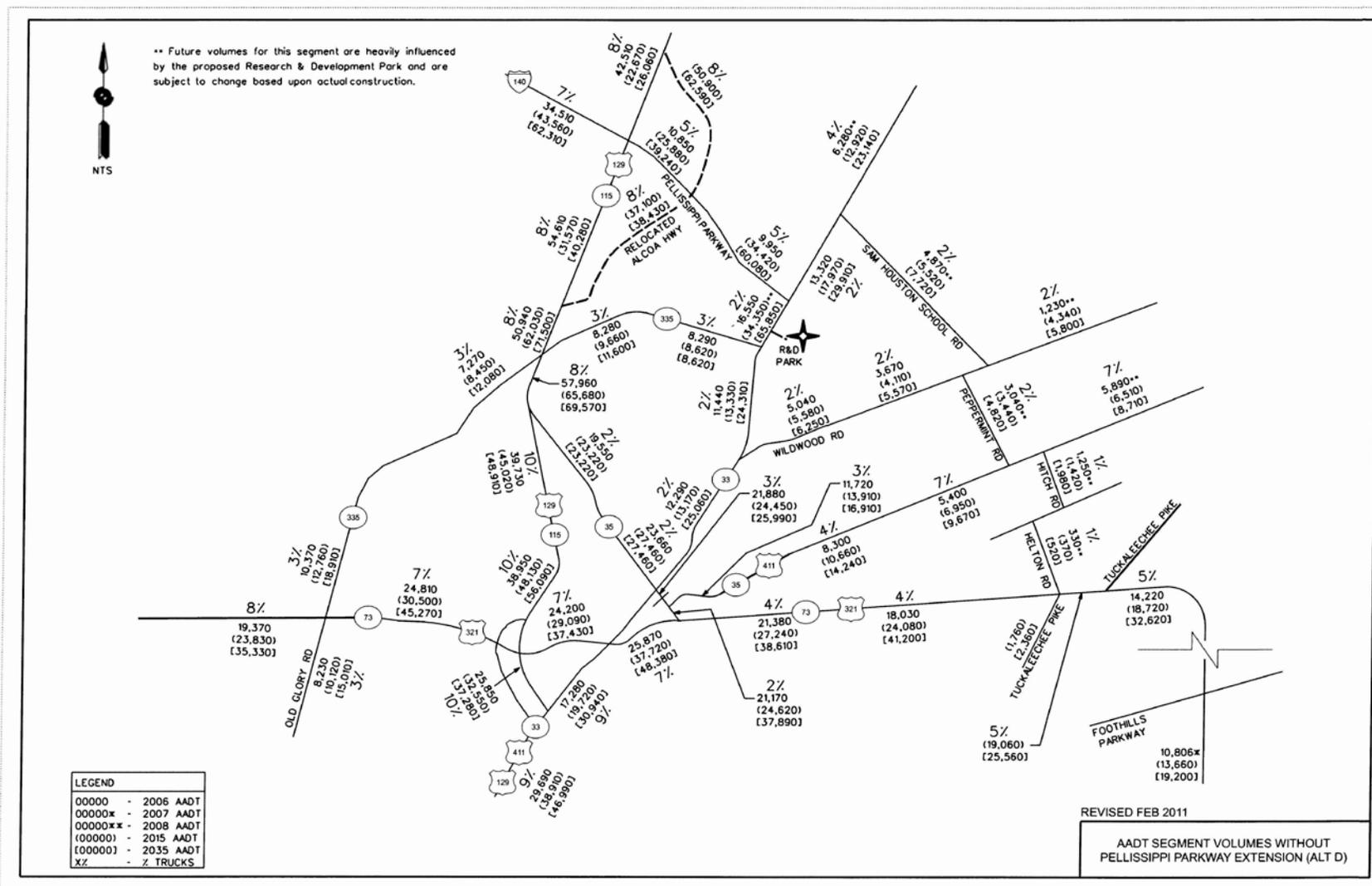


Figure 2: Build Forecasted AADT (Alternatives A/C)

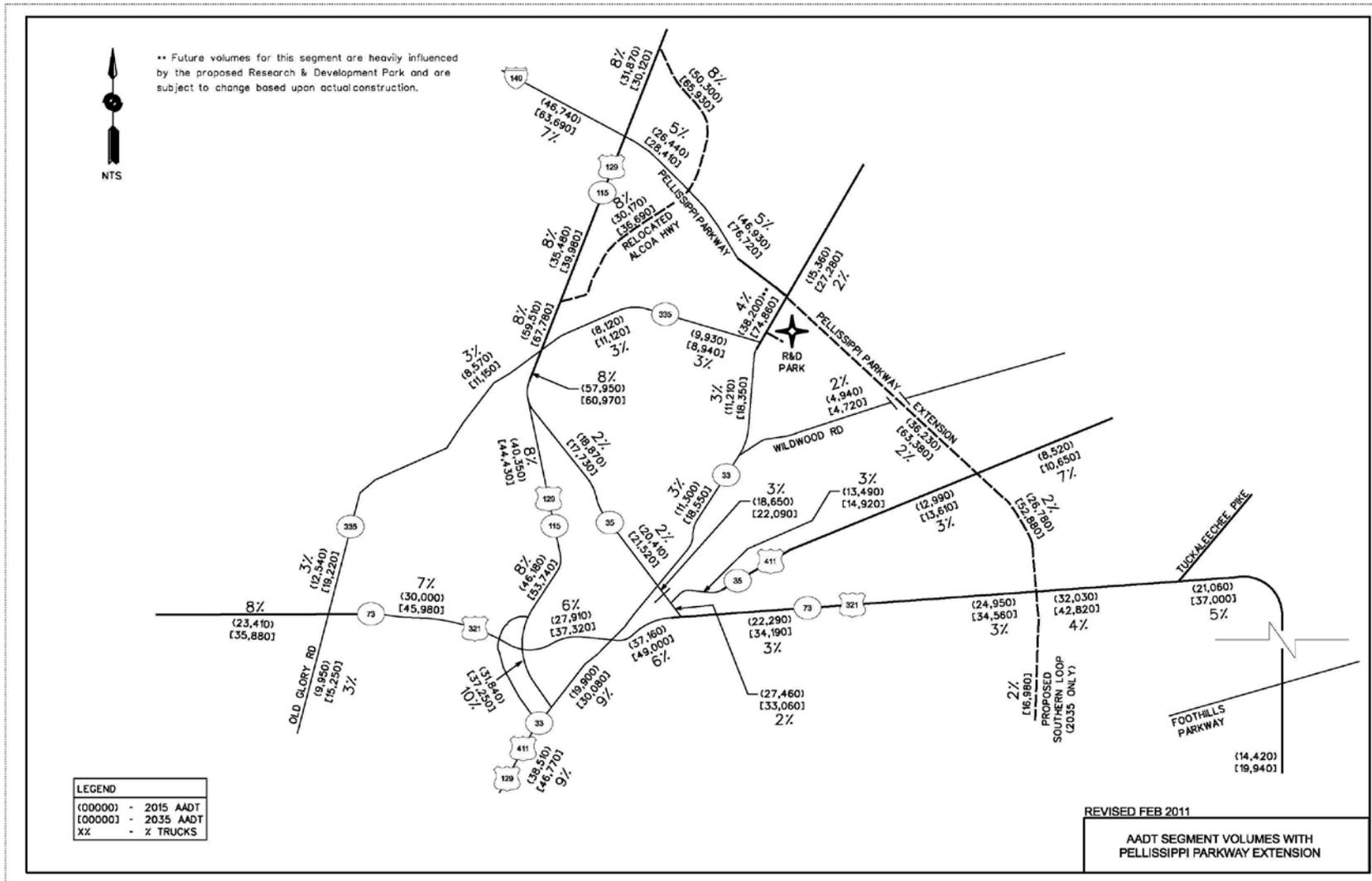
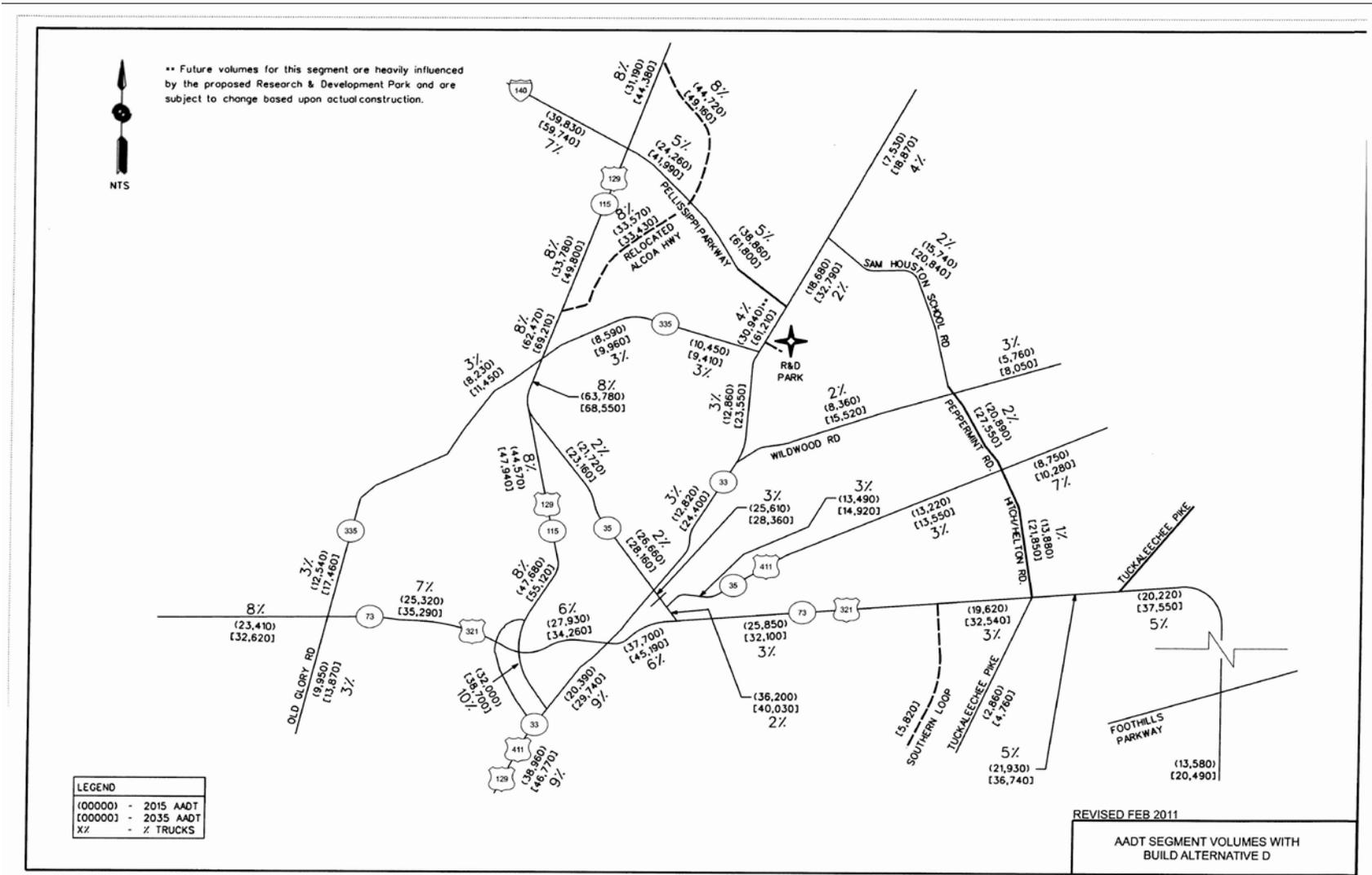


Figure 3: Build Forecasted AADT (Alternative D)



3.0 CORRIDOR LEVEL OF SERVICE ANALYSIS

To evaluate the effects of the project on traffic in the study area, the traffic operations analysis including a level of service analysis was conducted at the corridor level (roadway sections) for the No-Build Alternative and Build Alternatives (A/C and D) for the years 2015 and 2035. Existing (2006 / 2008) levels of service were determined for comparison purposes. The methodology and updated results for the corridor level traffic analysis are presented in the following subsections. Section 4.0 that follows presents the updated results for the traffic analysis at key intersections.

3.1 Study Area Roadways

The following roadways were identified as either routes along proposed interchanges with an extension of Pellissippi Parkway or as routes currently used in lieu of the proposed Pellissippi Parkway Extension.

- East Broadway / Old Knoxville Highway (SR 33)
- US 411 (SR 35)
- Lamar Alexander Parkway (SR 73 / US 321)
- Alcoa Highway (SR 115 / US 129)
- Hall Road (SR 35)
- Washington Street (SR 35)
- Wildwood Road
- Sam Houston School Road
- Peppermint Road
- Hitch Road
- Helton Road
- Tuckaleechee Pike

Each of these roadways has been evaluated for all analysis years to determine the effects of the proposed project on existing and future traffic operations in the vicinity of the project.

The proposed Relocated Alcoa Highway (RAH), which would extend east of the existing Alcoa Highway (SR 115 / US 129) generally between Cusick Road and south of the Blount / Knox County line, was included in the analysis. Since this is a proposed project, it was only included in the 2015 and 2035 No-Build and Build analyses.

The proposed Southern Loop was included in the 2035 Build Analysis for Alternative A/C since it was an approved project coded into the Regional Travel Demand Model (as a two lane road along existing or new alignment) in the later years of the long range plan.

3.2 Methodology

Level of service (LOS) is a qualitative measure of expected traffic conflicts, delay, driver discomfort, and congestion. Levels of service are described according to a letter rating system ranging from LOS A (free flow, minimal or no delays – best conditions) to LOS F

(stop and go conditions, very long delays – worst conditions). There are several ways levels of service can be calculated depending on the type of facility. The analysis methodologies used for this study are described below.

Two-Lane Highway Analysis

The Highway Capacity Software Plus (HCS+) two-lane road analysis software module based on the 2000 Highway Capacity Manual (HCM) was used to evaluate two-lane highways (e.g., SR 33, US 411, Wildwood Road, Sam Houston School Road, Peppermint Road, Hitch Road, Helton Road, and Tuckaleechee Pike). For this method, there are two classes of highways: **Class I** highways typically include higher speed arterials and daily commuter routes while **Class II** highways include lower speed collector roadways and roads primarily designed to provide access to individual properties. As SR 33 and US 411 are major state and nationally designated routes in this section of Tennessee, they were assumed to be Class I highways. As they currently exist, Wildwood Road, Sam Houston School Road, Peppermint Road, Hitch Road, Helton Road, and Tuckaleechee Pike were assumed to be Class II highways based on their lower speeds limits (between 25 mph and 45 mph) and their use as local access roads. However, with the upgrades and realignment proposed in Alternative D, their function changes; Sam Houston School Road, Peppermint Road, Hitch Road, and Helton Road becomes an informal bypass with an increased speed limit of 50 mph. Tuckaleechee Pike also provides additional connectivity in the future years under Alternative D. Therefore for the Alternative D scenario these five roadways are evaluated as Class I highways.

Levels of service for Class I highways are based on the estimated average travel speeds and percent time vehicles spend following other vehicles. Levels of service for Class II highways are based on the percent time vehicles spend following other vehicles only. The level of service criteria for two-lane highways is shown in **Table 1**.

Table 1: LOS Criteria for Two-Lane Highways

LOS	Class I Highways		Class II Highways
	Percent Time Spent Following	Average Travel Speed	Percent Time Spent Following
A	≤ 35	>55	≤ 40
B	>35 - 50	>50 – 55	>40 – 55
C	>50 - 65	>45 – 50	>55 – 70
D	>65 – 80	>40 - 45	>70 – 85
E	>80	≤40	>85
F	LOS F applies whenever the flow rate exceeds the capacity (3,200 pc/h*)		

Source: Highway Capacity Manual (2000)

*Capacity is 3,200 passenger cars per hour (pc/h) for the two-way flow rate

Level of Service (LOS) D is the threshold for desirable traffic operations in this study. According to the *AASHTO-Geometric Design of Highways and Streets* reference manual, a LOS D threshold for freeways and arterials can be an appropriate threshold in developed areas. While the study area is not currently a heavily developed, urbanized area, substantial development pressures may be expected in the future due to the population growth occurring in Blount County. The study area is included in the designated 2030 urban growth boundary for Maryville and Alcoa. It is reasonably foreseeable that by the year 2035 the area could be considered substantially developed.

Therefore, as most of the study area fits this criterion (or will in the future) it is acceptable practice to use this as the traffic operations threshold. Levels of service below this threshold (i.e., LOS E or F) are noted as undesirable and warrant improvement.

Multilane Highway Analysis

To analyze traffic operations for the four-lane or greater highway sections (US 129, SR 35, US 321, and Relocated Alcoa Highway), the HCS+ multilane analysis module was used. This is based on the 2000 Highway Capacity Manual’s methodology. For each section, the estimated travel speed and the resulting levels of service were calculated.

Levels of service for multilane highway sections are based on density in terms of passenger cars per mile per lane (pc/mi/ln) as shown in **Table 2**. Density is used to define level of service because it is an indicator of freedom to maneuver within the traffic stream and the proximity to other vehicles. Speed in terms of mean passenger-car speed and volume-to-capacity (v/c) ratios are interrelated with density and can be used to characterize a multilane highway segment.

Table 2: LOS Criteria for Multilane Highways

LOS	Density Range (pc/mi/ln)
A	0 – 11
B	> 11 – 18
C	> 18 – 26
D	>26 – 35
E	> 35 – 45
F	> 45

Source: Highway Capacity Manual (2000)

Similar to the two-lane highway analysis, LOS D is the lowest threshold for desirable traffic operations used in this study. For multilane highways, a LOS D corresponds to a density between 26 and 35 passenger cars per mile per lane. (Refer to the Highway Capacity Manual for more specific information.)

Freeway Analysis

To analyze peak hour traffic operations for Pellissippi Parkway (I-140), the HCS+ freeway analysis package was used. This is based on the 2000 Highway Capacity Manual (HCM Chapter 23) methodology. For each section, the estimated travel speed and the resulting levels of service were calculated.

Levels of service for freeway sections are also based on density in terms of passenger cars per mile per lane (pc/mi/ln) as shown in **Table 3**.

Table 3: LOS Criteria for Freeways

LOS	Density Range (pc/mi/ln)
A	0 – 11
B	> 11 – 18
C	> 18 – 26
D	>26 – 35
E	> 35 – 45
F	> 45

Source: Highway Capacity Manual (2000)

Again, LOS D is the threshold for desirable traffic operations used in this study. For freeways, a LOS D corresponds to a density between 26 and 35 passenger cars per mile per lane. (Refer to the Highway Capacity Manual for more specific information.)

3.3 No-Build Corridor Level of Service Results

The analysis of existing levels of service incorporates data from the years 2006 - 2008. The 2006 – 2008 average annual daily traffic volumes and forecasted traffic volumes (2015 and 2035) for the No-Build Alternative were provided as part of a Traffic Forecast Study prepared in 2007 (with the updates made based on the October 7, 2010 memorandum) for this project by Sain Associates, Inc. Also included in the Traffic Forecast Study were truck percentages for all analysis years. Peak hour traffic volumes for highway segments were calculated using a K-factor¹ obtained from TDOT's Tennessee Roadway Information Management System (TRIMS) Blount County Traffic Database. Functional classification, median type, directional split, current lane widths, shoulder widths, percent passing, speed limit, and access points per mile were also obtained from TRIMS as well as from roadway observations.

The Relocated Alcoa Highway is shown for the future years of 2015 and 2035. For the Relocated Alcoa Highway, several geometric assumptions were made based on initial design plans and the current operating characteristics of existing Alcoa Highway (US 129). These assumptions include an assumed K-factor of 0.100, a 55 mph speed limit, four access points per mile, three lanes per direction, and a 55/45 directional split of traffic. The percent trucks were provided in the traffic forecast.

Generally, most highway characteristics were available through TRIMS for the non state-maintained roads of Sam Houston School Road, Peppermint Road, Hitch Road, Helton Road, and Tuckaleechee Pike. Several assumptions were made for these roadways for the operational analysis including:

- Class II Highway
- No passing zones
- Eight (8) access points per mile
- Zero (0) percent recreational vehicles

The calculated level of service for each highway segment is shown on the following tables, **Tables 4** through **6** and on **Figures 4** through **6**. It should be noted that sections with an associated speed less than 45 mph were not analyzed as the HCS+ software will not calculate a level of service if the free-flow speed is less than 45 mph. Typically these sections are located in an urbanized area where traffic signals dictate the traffic operations. Therefore, to determine the operations along these sections please refer to the intersection traffic analysis provided in Section 4.0 of this report.

The shading on the tables and figures indicates acceptable versus poor operating conditions. Green shading was used to indicate acceptable traffic operations (LOS D or better) with red used to indicate poor traffic operations (LOS E or F). Gray shading indicates that the LOS could not be calculated due to the inability of the HCS+ software to determine the corridor LOS for urban streets with speeds less than 45 mph.

¹ The K-factor is used to compute design hour volumes (DHV) and is based on the 30th highest hour of the year.

Table 4: Existing Corridor Levels of Service

Route	Section	Begin Milepoint	End Milepoint	Section Length (miles)	2006 ADT	K-Factor	2006 DHV	Posted Speed Limit (MPH)	% Trucks and Buses	Estimated Travel Speed (MPH)	% Time Spent Following	Density (pc/mi/ln)	LOS
Wildwood Road	1	E. Broadway/Old Knoxville Hwy (SR 33) MP 0.000	Reservoir Rd MP 1.309	1.31	5,040	0.110	554	45	2.0%	31.6	59.6	N/A	C
	2	Reservoir Rd MP 1.309	Sam Houston School Rd. MP 2.650	1.34	3,670	0.110	404	45	2.0%	32.6	57.8	N/A	C
	3	Sam Houston School Rd. MP 2.650	End of Study Area MP 4.740	2.09	1,230	0.110	135	45	2.0%	35.6	36.9	N/A	A
Pellissippi Parkway	1	Topside Rd MP 0.810	Alooa Hwy (SR 115/US 129) MP 2.240	1.43	34,510	0.120	4141	60	7.0%	57.5	N/A	22.1	C
	2	Alooa Hwy (SR 115/US 129) MP 2.240	Relocated Alcoa Highway MP 3.240	1.00	10,850	0.130	1411	60	5.0%	57.5	N/A	7.3	A
	3	Relocated Alcoa Highway MP 3.240	E. Broadway/Old Knoxville Hwy (SR 33) MP 4.710	1.47	9,950	0.130	1294	60	5.0%	57.5	N/A	6.7	A
Lamar Alexander Parkway (SR 73 / US 321)	1	Beginning of Study Area MP 8.250	Alooa Hwy (SR 115/US 129) MP 10.570	2.32	24,810	0.110	2729	55	7.0%	54.0	N/A	16.4	B
	2	Alooa Hwy (SR 115/US 129) MP 10.570	E. Broadway/Old Knoxville Hwy (SR 33) MP 11.850	1.08	24,200	0.100	2420	45	7.0%	45.0	N/A	18.5	C
	3	E. Broadway/Old Knoxville Hwy (SR 33) MP 11.850	Jones Ave MP 12.528	0.87	25,870	0.100	2587	40	7.0%				
	4	Jones Ave MP 12.520	Merritt Rd MP 13.980	1.46	21,380	0.100	2138	50	4.0%	50.0	N/A	16.4	B
	5	Merritt Rd MP 13.980	Tuckaleechee Pk MP 17.020	3.04	18,030	0.100	1803	50	4.0%	50.0	N/A	10.8	A
	6	Tuckaleechee Pk MP 17.020	Melrose Station Rd MP 20.020	3.00	14,220	0.100	1422	55	5.0%	53.0	N/A	9.0	A
	7	Melrose Station Rd MP 20.020	Foothills Pkwy MP 22.400	2.38	10,806	0.100	1081	55	5.0%	53.0	N/A	6.8	A
Hall Road (SR 35)	1	Alooa Hwy (SR 115/US 129) MP 0.000	Bessemer St MP 1.520	1.52	19,550	0.100	1955	45	2.0%	45.0	N/A	14.4	B
	2	Bessemer St MP 1.520	E. Broadway/Old Knoxville Hwy (SR 33) MP 2.590	1.07	23,660	0.100	2366	35	2.0%				
Washington Street (SR 35)	1	E. Broadway/Old Knoxville Hwy (SR 33) MP 2.590	US 411 (SR 35) MP 2.820	0.23	21,880	0.100	2188	30	3.0%				
	2	US 411 (SR 35) MP 0.000	Lamar Alexander Pkwy (SR 73/US 321) MP 0.160	0.16	21,170	0.100	2117	30	2.0%				
US 411 (SR 35)	1	Washington St (SR 35) MP 2.820	S. Everett High Rd MP 3.690	0.87	11,720	0.110	1289	40	3.0%				
	2	S. Everett High Rd MP 3.690	Westfield Dr 4.527	0.84	8,300	0.100	830	45	4.0%	26.4	69.7	N/A	E
	3	Westfield Dr 4.527	Hitch Rd 7.254	2.73	5,400	0.100	540	45	7.0%	28.2	61.3	N/A	E
	4	Hitch Rd 7.254	End of Study Area 7.990	0.74	5,890	0.100	589	45	7.0%	27.9	62.4	N/A	E

Table 4: Existing Corridor Levels of Service (cont.)

Route	Section	Begin Milepoint	End Milepoint	Section Length (miles)	2006 ADT	K-Factor	2006 DHV	Posted Speed Limit (MPH)	% Trucks and Buses	Estimated Travel Speed (MPH)	% Time Spent Following	Density (pc/mi/ln)	LOS
E. Broadway / Old Knoxville Highway (SR 33)	1	Beginning of Study Area MP 7.854	Montgomery Lane MP 10.201	2.35	29,690	0.100	2969	50	9.0%	50.0	N/A	24.3	C
	2	Montgomery Lane MP 10.201	Hall Rd MP 12.340	2.14	17,280	0.100	1728	30	9.0%				
	3	Hall Rd MP 12.340	Wildwood Rd MP 14.206	1.87	12,290	0.100	1229	30	2.0%				
	4	Wildwood Rd MP 14.206	Hunt Rd MP 15.470	1.26	11,440	0.100	1144	40	2.0%				
	5	Hunt Rd MP 15.470	Pellissippi Pky MP 15.920	0.45	16,550	0.110	1821	40	2.0%				
	6	Pellissippi Pky MP 15.920	Sam Houston School Rd. MP 16.370	0.45	13,320	0.110	1465	40	2.0%				
	7	Sam Houston School Rd. MP 16.370	County Line MP 20.680	4.29	6,280	0.120	754	50	4.0%	34.9	68.4	N/A	E
Alcoa Highway (SR 115 / US 129)	1	Broadway Ave MP 10.450	Lamar Alexander Pkwy (SR 73/US 321) MP 11.340	0.89	25,850	0.100	2585	50	10.0%	49.0	N/A	20.9	C
	2	Lamar Alexander Pkwy (SR 73/US 321) MP 11.340	Louisville Rd (MP 13.020)	2.94	38,950	0.100	3895	55	10.0%	54.3	N/A	25.7	C
	3	Louisville Rd (MP 13.020)	Hall Rd (SR 35) MP 14.280	1.26	39,730	0.100	3973	55	10.0%	54.3	N/A	25.7	C
	4	Hall Rd (SR 35) MP 14.280	Hunt Rd MP 15.020	0.74	57,960	0.070	4057	55	8.0%	53.3	N/A	30.8	D
	5	Hunt Rd MP 15.020	Cusick Rd MP 16.000	0.98	50,940	0.100	5094	50	8.0%	45.8	N/A	39.6	E
	6	Cusick Rd MP 16.000	Pellissippi Pky MP 17.680	2.64	54,610	0.100	5461	50	8.0%	43.4	N/A	42.2	E
	7	Pellissippi Pky MP 17.680	County Line MP 20.400	2.74	42,510	0.110	4676	55	8.0%	51.1	N/A	30.7	D
Sam Houston	1	SR 33 MP 0.000	Wildwood Rd MP 2.650	2.65	4,870	0.160	779	45	2.0%	32.7	55.8	N/A	C
Peppermint Road	1	Wildwood Rd MP 0.000	Sevierville Rd MP 1.100	1.10	3,040	0.150	456	35	2.0%	30.7	38.1	N/A	A
Hitch Road	1	Sevierville Rd MP 1.202	Davis Ford Rd MP 0.000	1.20	1,250	0.150	188	25	1.0%	27.7	22.9	N/A	A
Helton Road	1	Davis Ford Rd MP 0.875	Lamar Alexander Pkwy MP 0.000	0.88	330	0.150	65	25	1.0%	29.2	11.1	N/A	A

Table 5: 2015 No-Build Corridor Levels of Service

Route	Section	Begin Milepoint	End Milepoint	Section Length (miles)	2015 ADT	K-Factor	2015 DHV	Posted Speed Limit (MPH)	% Trucks and Buses	Estimated Travel Speed (MPH)	% Time Spent Following	Density (pc/mi/ln)	LOS
Wildwood Road	1	E. Broadway/Old Knoxville Hwy (SR 33) MP 0.000	Reservoir Rd MP 1.309	1.31	5,580	0.110	614	45	2.0%	31.2	61.1	N/A	C
	2	Reservoir Rd MP 1.309	Sam Houston School Rd. MP 2.650	1.34	4,110	0.110	452	45	2.0%	32.2	55.5	N/A	C
	3	Sam Houston School Rd. MP 2.650	End of Study Area MP 4.740	2.09	4,340	0.110	477	45	2.0%	32.1	56.8	N/A	C
Pellissippi Parkway	1	Topside Rd MP 0.810	Alcoa Hwy (SR 115/US 129) MP 2.240	1.43	43,560	0.120	5227	60	7.0%	57.5	N/A	27.9	D
	2	Alcoa Hwy (SR 115/US 129) MP 2.240	Relocated Alcoa Highway MP 3.240	1.00	25,880	0.130	3364	60	5.0%	57.5	N/A	17.5	B
	3	Relocated Alcoa Highway MP 3.240	E. Broadway/Old Knoxville Hwy (SR 33) MP 4.710	1.47	34,420	0.130	4475	60	5.0%	57.5	N/A	23.2	C
Lamar Alexander Parkway (SR 73 / US 321)	1	Beginning of Study Area MP 8.250	Alcoa Hwy (SR 115/US 129) MP 10.570	2.32	30,500	0.110	3355	55	7.0%	54.0	N/A	20.2	C
	2	Alcoa Hwy (SR 115/US 129) MP 10.570	E. Broadway/Old Knoxville Hwy (SR 33) MP 11.650	1.08	29,090	0.100	2909	45	7.0%	45.0	N/A	22.2	C
	3	E. Broadway/Old Knoxville Hwy (SR 33) MP 11.650	Jones Ave MP 12.526	0.87	37,720	0.100	3772	40	7.0%				
	4	Jones Ave MP 12.520	Merritt Rd MP 13.980	1.46	27,240	0.100	2724	50	4.0%	50.0	N/A	20.8	C
	5	Merritt Rd MP 13.980	Tuckaleechee Pk MP 17.020	3.04	24,080	0.100	2408	50	4.0%	50.0	N/A	14.5	B
	6	Tuckaleechee Pk MP 17.020	Tuckaleechee Pk MP 17.320	0.30	19,060	0.100	1906	55	5.0%	53.0	N/A	12.0	B
	7	Tuckaleechee Pk MP 17.320	Melrose Station Rd MP 20.020	2.70	18,720	0.100	1872	55	5.0%	53.0	N/A	11.8	B
	8	Melrose Station Rd MP 20.020	Foothills Pkwy MP 22.400	2.38	13,660	0.100	1366	55	5.0%	53.0	N/A	8.6	A
Hall Road (SR 35)	1	Alcoa Hwy (SR 115/US 129) MP 0.000	Bessemer St MP 1.520	1.52	23,220	0.100	2322	45	2.0%	45.0	N/A	17.1	B
	2	Bessemer St MP 1.520	E. Broadway/Old Knoxville Hwy (SR 33) MP 2.590	1.07	27,460	0.100	2746	35	2.0%				
Washington Street (SR 35)	1	E. Broadway/Old Knoxville Hwy (SR 33) MP 2.590	US 411 (SR 35) MP 2.820	0.23	24,450	0.100	2445	30	3.0%				
	2	US 411 (SR 35) MP 0.000	Lamar Alexander Pkwy (SR 73/US 321) MP 0.160	0.16	24,620	0.100	2462	30	2.0%				
US 411 (SR 35)	1	Washington St (SR 35) MP 2.820	S. Everett High Rd MP 3.690	0.87	13,910	0.110	1530	40	3.0%				
	2	S. Everett High Rd MP 3.690	Westfield Dr 4.627	0.84	10,660	0.100	1066	45	4.0%	25.3	74.1	N/A	E
	3	Westfield Dr 4.627	Hitch Rd 7.254	2.73	6,950	0.100	695	45	7.0%	27.2	65.3	N/A	E
	4	Hitch Rd 7.254	End of Study Area 7.990	0.74	6,510	0.100	651	45	7.0%	27.5	63.6	N/A	E

Table 5: 2015 No-Build Corridor Levels of Service (cont.)

Route	Section	Begin Milepoint	End Milepoint	Section Length (miles)	2015 ADT	K-Factor	2015 DHV	Posted Speed Limit (MPH)	% Trucks and Buses	Estimated Travel Speed (MPH)	% Time Spent Following	Density (pc/mi/ln)	LOS
E. Broadway / Old Knoxville Highway (SR 33)	1	Beginning of Study Area MP 7.854	Montgomery Lane MP 10.201	2.35	38,910	0.100	3891	50	9.0%	50.0	N/A	32.4	D
	2	Montgomery Lane MP 10.201	Hall Rd MP 12.340	2.14	19,720	0.100	1972	30	9.0%				
	3	Hall Rd MP 12.340	Wildwood Rd MP 14.206	1.87	13,170	0.100	1317	30	2.0%				
	4	Wildwood Rd MP 14.206	Hunt Rd MP 15.470	1.26	13,330	0.100	1333	40	2.0%				
	5	Hunt Rd MP 15.470	Pellissippi Pky MP 15.920	0.45	34,350	0.110	3779	40	2.0%				
	6	Pellissippi Pky MP 15.920	Sam Houston School Rd MP 16.370	0.45	17,970	0.110	1977	40	2.0%				
	7	Sam Houston School Rd MP 16.370	County Line MP 20.660	4.29	12,920	0.120	1550	50	4.0%	29.8	84.1	N/A	E
Alcoa Highway (SR 115 / US 129)	1	Broadway Ave MP 10.450	Lamar Alexander Pkwy (SR 73/US 321) MP 11.340	0.89	32,550	0.100	3255	50	10.0%	49.0	N/A	26.3	D
	2	Lamar Alexander Pkwy (SR 73/US 321) MP 11.340	Louisville Rd (MP 13.020)	2.94	48,130	0.100	4813	55	10.0%	54.3	N/A	32.6	D
	3	Louisville Rd (MP 13.020)	Hall Rd (SR 35) MP 14.280	1.26	45,020	0.100	4502	55	10.0%	54.3	N/A	29.5	D
	4	Hall Rd (SR 35) MP 14.280	Hunt Rd MP 15.020	0.74	65,680	0.070	4598	55	8.0%	52.0	N/A	35.7	E
	5	Hunt Rd MP 15.020	Relocated Alcoa Hwy MP 16.000	0.98	62,030	0.100	6203	50	8.0%	45.8	N/A	-	F
	6	Relocated Alcoa Hwy MP 16.000	Pellissippi Pky MP 17.660	2.64	31,570	0.100	3157	50	8.0%	45.8	N/A	21.9	C
	7	Pellissippi Pky MP 17.660	County Line MP 20.400	2.74	22,670	0.110	2494	55	8.0%	51.8	N/A	16.2	B
Sam Houston	1	SR 33 MP 0.000	Wildwood Rd MP 2.650	2.65	5,520	0.160	883	45	2.0%	31.7	60.4	N/A	C
Peppermint Road	1	Wildwood Rd MP 0.000	Sevierville Rd MP 1.100	1.10	3,440	0.150	516	35	2.0%	30.1	41.8	N/A	B
Hitch Road	1	Sevierville Rd MP 1.202	Davis Ford Rd MP 0.000	1.20	1,420	0.150	213	25	1.0%	27.4	25.1	N/A	A
Helton Road	1	Davis Ford Rd MP 0.875	Lamar Alexander Pkwy MP 0.000	0.88	370	0.150	56	25	1.0%	29.3	10.1	N/A	A
Tuckaleechee Pike	1	Lamar Alexander Pkwy 4.490	Hubbard School Rd MP 4.189	0.30	1,760	0.110	194	45	0.0%	40.1	42.0	N/A	B
Relocated Alcoa Highway	1	Alcoa Highway (SR 115 / US 129)	Pellissippi Pky	Not Determined	37,100	0.100	3710	55	8.0%	52.4	N/A	16.7	B
	2	Pellissippi Pky	Alcoa Highway (SR 115 / US 129)	Not Determined	50,900	0.100	5090	55	8.0%	52.4	N/A	26.2	D

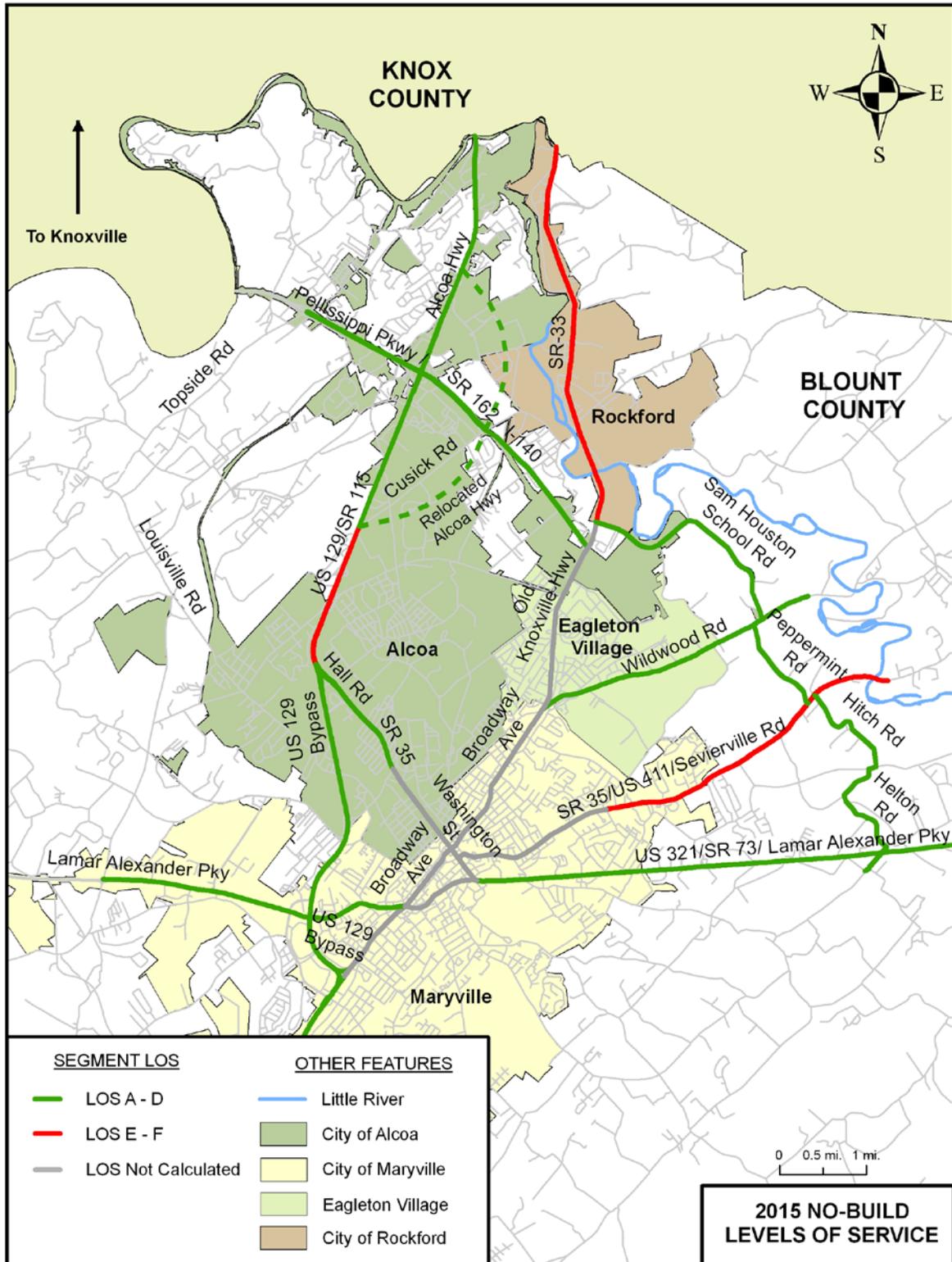
Table 6: 2035 No-Build Corridor Levels of Service

Route	Section	Begin Milepoint	End Milepoint	Section Length (miles)	2035ADT	K-Factor	2035 DHV	Posted Speed Limit (MPH)	% Trucks and Buses	Estimated Travel Speed (MPH)	% Time Spent Following	Density (pc/mi/ln)	LOS
Wildwood Road	1	E. Broadway/Old Knoxville Hwy (SR 33) MP 0.000	Reservoir Rd MP 1.309	1.31	6,250	0.110	688	45	2.0%	30.7	63.0	N/A	C
	2	Reservoir Rd MP 1.309	Sam Houston School Rd MP 2.650	1.34	5,570	0.110	613	45	2.0%	31.2	61.1	N/A	C
	3	Sam Houston School Rd MP 2.650	End of Study Area MP 4.740	2.09	5,800	0.110	638	45	2.0%	31.1	61.6	N/A	C
Pellissippi Parkway	1	Topside Rd MP 0.810	Alcoa Hwy (SR 115/US 129) MP 2.240	1.43	62,310	0.120	7477	60	7.0%	-	N/A	-	F
	2	Alcoa Hwy (SR 115/US 129) MP 2.240	Relocated Alcoa Highway MP 3.240	1.00	39,240	0.130	5101	60	5.0%	57.5	N/A	26.5	D
	3	Relocated Alcoa Highway MP 3.240	E. Broadway/Old Knoxville Hwy (SR 33) MP 4.710	1.47	60,080	0.130	7810	60	5.0%	-	N/A	-	F
Lamar Alexander Parkway (SR 73 / US 321)	1	Beginning of Study Area MP 8.250	Alcoa Hwy (SR 115/US 129) MP 10.570	2.32	45,270	0.110	4980	55	7.0%	53.2	N/A	30.5	D
	2	Alcoa Hwy (SR 115/US 129) MP 10.570	E. Broadway/Old Knoxville Hwy (SR 33) MP 11.650	1.08	37,430	0.100	3743	45	7.0%	45.0	N/A	28.6	D
	3	E. Broadway/Old Knoxville Hwy (SR 33) MP 11.650	Jones Ave MP 12.526	0.87	48,380	0.100	4838	40	7.0%				
	4	Jones Ave MP 12.520	Merritt Rd MP 13.980	1.46	38,610	0.100	3861	50	4.0%	49.8	N/A	29.7	D
	5	Merritt Rd MP 13.980	Tuckaleechee Pk MP 17.020	3.04	41,200	0.100	4120	50	4.0%	50.0	N/A	24.7	C
	6	Tuckaleechee Pk MP 17.020	Tuckaleechee Pk MP 17.320	0.30	25,560	0.100	2556	55	5.0%	53.0	N/A	16.1	B
	7	Tuckaleechee Pk MP 17.320	Melrose Station Rd MP 20.020	2.70	32,620	0.100	3262	55	5.0%	53.0	N/A	20.6	C
	8	Melrose Station Rd MP 20.020	Foothills Pkwy MP 22.400	2.38	19,200	0.100	1920	55	5.0%	53.0	N/A	12.1	B
Hall Road (SR 35)	1	Alcoa Hwy (SR 115/US 129) MP 0.000	Bessemer St MP 1.520	1.52	23,220	0.100	2322	45	2.0%	45.0	N/A	17.1	B
	2	Bessemer St MP 1.520	E. Broadway/Old Knoxville Hwy (SR 33) MP 2.590	1.07	27,460	0.100	2746	35	2.0%				
Washington Street (SR 35)	1	E. Broadway/Old Knoxville Hwy (SR 33) MP 2.590	US 411 (SR 35) MP 2.820	0.23	25,990	0.100	2599	30	3.0%				
	2	US 411 (SR 35) MP 0.000	Lamar Alexander Pkwy (SR 73/US 321) MP 0.160	0.16	37,890	0.100	3789	30	2.0%				
US 411 (SR 35)	1	Washington St (SR 35) MP 2.820	S. Everett High Rd MP 3.690	0.87	16,910	0.110	1860	40	3.0%				
	2	S. Everett High Rd MP 3.690	Westfield Dr 4.527	0.84	14,240	0.100	1424	45	4.0%	22.6	81.2	N/A	E
	3	Westfield Dr 4.527	Hitch Rd 7.254	2.73	9,670	0.100	967	45	7.0%	25.8	74.0	N/A	E
	4	Hitch Rd 7.254	End of Study Area 7.990	0.74	8,710	0.100	871	45	7.0%	25.9	71.4	N/A	E

Table 6: 2035 No-Build Corridor Levels of Service (cont.)

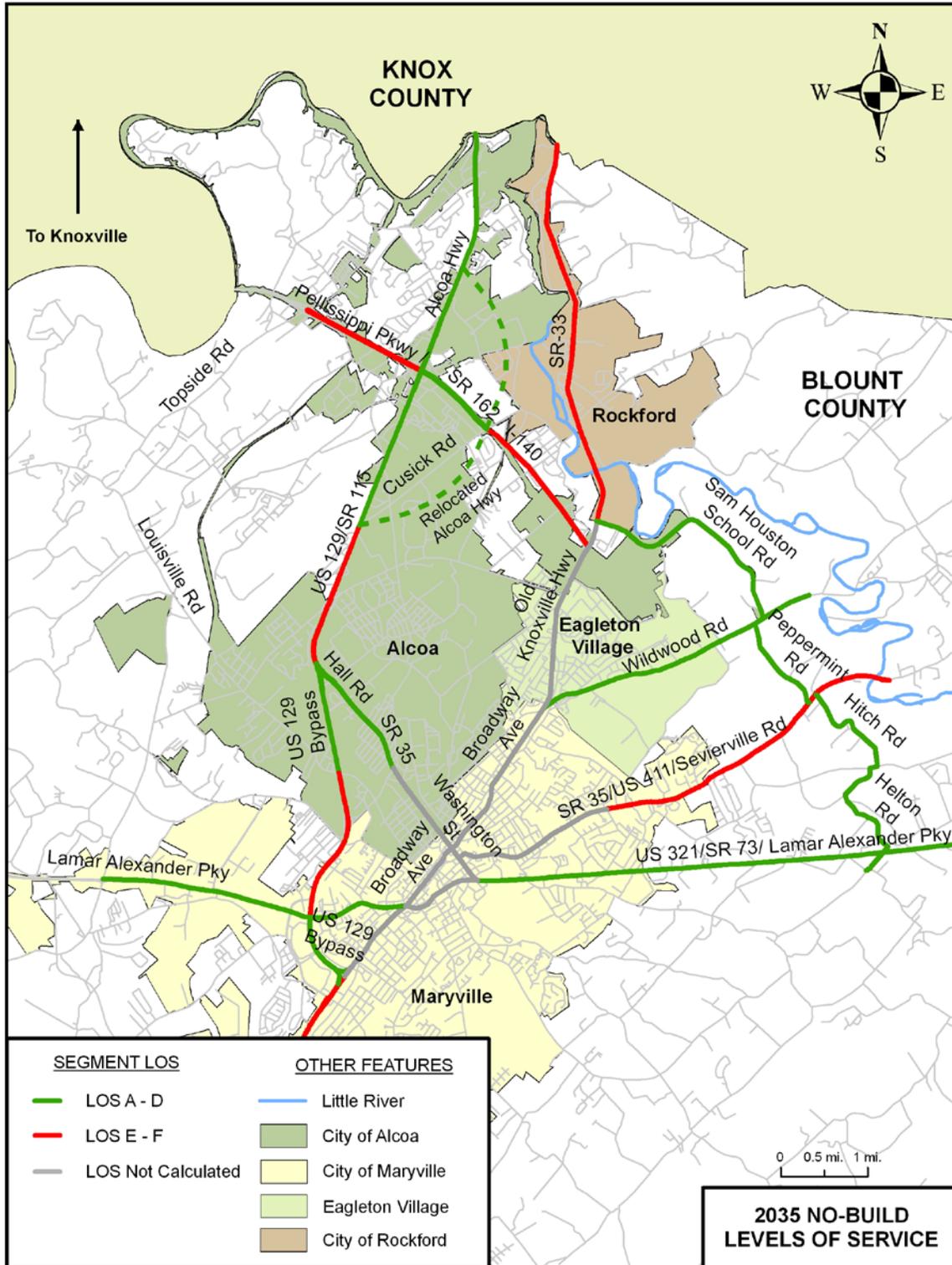
Route	Section	Begin Milepoint	End Milepoint	Section Length (miles)	2035 ADT	K-Factor	2035 DHV	Posted Speed Limit (MPH)	% Trucks and Buses	Estimated Travel Speed (MPH)	% Time Spent Following	Density (pc/mi/ln)	LOS
E. Broadway / Old Knoxville Highway (SR 33)	1	Beginning of Study Area MP 7.854	Montgomery Lane MP 10.201	2.35	46,990	0.100	4699	50	9.0%	47.1	N/A	40.9	E
	2	Montgomery Lane MP 10.201	Hall Rd MP 12.340	2.14	30,940	0.100	3094	30	9.0%				
	3	Hall Rd MP 12.340	Wildwood Rd MP 14.206	1.87	25,060	0.100	2506	30	2.0%				
	4	Wildwood Rd MP 14.206	Hunt Rd MP 15.470	1.26	24,310	0.100	2431	40	2.0%				
	5	Hunt Rd MP 15.470	Pellissippi Pky MP 15.920	0.45	65,850	0.110	7244	40	2.0%				
	6	Pellissippi Pky MP 15.920	Sam Houston School Rd MP 16.370	0.45	29,910	0.110	3290	40	2.0%				
	7	Sam Houston School Rd MP 16.370	County Line MP 20.400	4.29	23,140	0.120	2777	50	4.0%	19.5	96.6	N/A	F
Alcoa Highway (SR 115 / US 129)	1	Broadway Ave MP 10.450	Lamar Alexander Pkwy (SR 73/US 321) MP 11.340	0.89	37,280	0.100	3728	50	10.0%	48.8	N/A	30.3	D
	2	Lamar Alexander Pkwy (SR 73/US 321) MP 11.340	Louisville Rd (MP 13.020)	2.94	56,090	0.100	5609	55	10.0%	51.1	N/A	39.3	E
	3	Louisville Rd (MP 13.020)	Hall Rd (SR 35) MP 14.280	1.26	48,910	0.100	4891	55	10.0%	52.9	N/A	32.5	D
	4	Hall Rd (SR 35) MP 14.280	Hunt Rd MP 15.020	0.74	69,570	0.070	4870	55	8.0%	51.3	N/A	38.4	E
	5	Hunt Rd MP 15.020	Relocated Alcoa Hwy MP 16.000	0.98	71,500	0.100	7150	50	8.0%	-	N/A	-	F
	6	Relocated Alcoa Hwy MP 16.000	Pellissippi Pky MP 17.660	2.64	40,280	0.100	4028	50	8.0%	45.8	N/A	27.9	D
	7	Pellissippi Pky MP 17.660	County Line MP 20.400	2.74	26,060	0.110	2867	55	8.0%	51.8	N/A	18.6	C
Sam Houston	1	SR 33 MP 0.000	Wildwood Rd MP 2.650	2.65	7,720	0.160	1235	45	2.0%	29.1	70.1	N/A	D
Peppermint Road	1	Wildwood Rd MP 0.000	Sevierville Rd MP 1.100	1.10	4,820	0.150	723	35	2.0%	28.2	53.2	N/A	B
Hitch Road	1	Sevierville Rd MP 1.202	Davis Ford Rd MP 0.000	1.20	1,980	0.150	297	25	1.0%	26.3	32.0	N/A	A
Helton Road	1	Davis Ford Rd MP 0.875	Lamar Alexander Pkwy MP 0.000	0.88	520	0.150	78	25	1.0%	29.0	12.4	N/A	A
Tuckaleechee Pike	1	Lamar Alexander Pkwy 4.490	Hubbard School Rd MP 4.189	0.30	2,360	0.110	260	45	0.0%	38.8	47.4	N/A	B
Relocated Alcoa Highway	1	Alcoa Highway (SR 115 / US 129)	Pellissippi Pky	Not Determined	38,430	0.100	3710	55	8.0%	52.4	N/A	19.1	C
	2	Pellissippi Pky	Alcoa Highway (SR 115 / US 129)	Not Determined	62,590	0.100	6259	55	8.0%	51.2	N/A	26.2	D

Figure 5: 2015 Segment No-Build Levels of Service



Note: The Relocated Alcoa Highway is shown for conceptual purposes only; no specific alignment or location has been determined.

Figure 6: 2035 Segment No-Build Levels of Service



Note: The Relocated Alcoa Highway is shown for conceptual purposes only; no specific alignment or location has been determined.

3.4 Build Corridor Level of Service Results

As mentioned previously in the Analysis of Alternatives section, according to the Knoxville Regional Travel Demand Model, there is little differentiation between Alternatives A and C. Therefore, the same traffic volumes and operations were assumed for both alternatives at this level of analysis. The forecasted Build Alternatives A and C traffic volumes (2015 and 2035) included as part of the 2007 Traffic Forecast Study prepared for this project by Sain Associates, Inc. were used (with the updates made based on the October 7, 2010 memorandum). Similar geometrics and factors used for the No-Build analysis were also used in this analysis. Forecasts for Alternative D were developed in February 2011 and used for this analysis to have comparable results among the project alternatives.

The following tables and figures, **Tables 7 – 10** and **Figures 7 – 10** show the resulting levels of service for each build alternative (Alternatives A / C and Alternative D).

Table 7: 2015 Build Corridor (Alternatives A/C) Levels of Service

Route	Section	Begin Milepoint	End Milepoint	Section Length (miles)	2015 ADT	K-Factor	2015 DHV	Posted Speed Limit (MPH)	% Trucks and Buses	Estimated Travel Speed (MPH)	% Time Spent Following	Density (pc/mi/ln)	LOS
Wildwood Road	1	E. Broadway/Old Knoxville Hwy (SR 33) MP 0.000	Reservoir Rd MP 1.309	1.31	4,940	0.110	543	45	2.0%	31.6	59.3	N/A	C
	2	Reservoir Rd MP 1.309	Sam Houston School Rd MP 2.650	1.34	4,940	0.110	543	45	2.0%	31.6	59.3	N/A	C
	3	Sam Houston School Rd MP 2.650	End of Study Area MP 4.740	2.09	4,940	0.110	543	45	2.0%	31.6	59.3	N/A	C
Pellissippi Parkway	1	Topside Rd MP 0.810	Alcoa Hwy (SR 115/US 129) MP 2.240	1.43	46,740	0.120	5609	60	7.0%	57.5	N/A	30.0	D
	2	Alcoa Hwy (SR 115/US 129) MP 2.240	Relocated Alcoa Highway MP 3.240	1.00	26,440	0.130	3437	60	5.0%	57.5	N/A	17.8	B
	3	Relocated Alcoa Highway MP 3.240	E. Broadway/Old Knoxville Hwy (SR 33) MP 4.710	1.47	46,930	0.130	6101	60	5.0%	57.3	N/A	31.8	D
	4	E. Broadway/Old Knoxville Hwy (SR 33) MP 4.710	US 411 (SR 35)	Not Determined	36,230	0.130	4710	60	2.0%	57.5	N/A	23.4	C
	5	US 411 (SR 35)	Lamar Alexander Pkwy (SR 73 / US 321)	Not Determined	26,780	0.130	3481	60	2.0%	57.5	N/A	17.3	B
Lamar Alexander Parkway (SR 73 / US 321)	1	Beginning of Study Area MP 8.250	Alcoa Hwy (SR 115/US 129) MP 10.570	2.32	30,000	0.110	3300	55	7.0%	54.0	N/A	19.9	C
	2	Alcoa Hwy (SR 115/US 129) MP 10.570	E. Broadway/Old Knoxville Hwy (SR 33) MP 11.650	1.08	27,910	0.100	2791	45	6.0%	45.0	N/A	21.0	C
	3	E. Broadway/Old Knoxville Hwy (SR 33) MP 11.650	Jones Ave MP 12.526	0.87	37,160	0.100	3716	40	6.0%				
	4	Jones Ave MP 12.520	Merritt Rd MP 13.980	1.46	22,290	0.100	2229	50	3.0%	50.0	N/A	16.8	B
	5	Merritt Rd MP 13.980	Tuckaleechee Pk MP 17.020	3.04	24,950	0.100	2495	50	3.0%	50.0	N/A	14.8	B
	6	Tuckaleechee Pk MP 17.020	Tuckaleechee Pk MP 17.320	0.30	32,030	0.100	3203	55	4.0%	53.0	N/A	19.9	C
	7	Tuckaleechee Pk MP 17.320	Melrose Station Rd MP 20.020	2.70	21,060	0.100	2106	55	5.0%	53.0	N/A	13.3	B
	8	Melrose Station Rd MP 20.020	Foothills Pkwy MP 22.400	2.38	14,420	0.100	1442	55	5.0%	53.0	N/A	9.1	A
Hall Road (SR 35)	1	Alcoa Hwy (SR 115/US 129) MP 0.000	Bessemer St MP 1.520	1.52	18,870	0.100	1887	45	2.0%	45.0	N/A	13.9	B
	2	Bessemer St MP 1.520	E. Broadway/Old Knoxville Hwy (SR 33) MP 2.590	1.07	20,410	0.100	2041	35	2.0%				
Washington Street (SR 35)	1	E. Broadway/Old Knoxville Hwy (SR 33) MP 2.590	US 411 (SR 35) MP 2.820	0.23	18,650	0.100	1865	30	3.0%				
	2	US 411 (SR 35) MP 0.000	Lamar Alexander Pkwy (SR 73/US 321) MP 0.160	0.16	27,460	0.100	2746	30	2.0%				
US 411 (SR 35)	1	Washington St (SR 35) MP 2.820	S. Everett High Rd MP 3.690	0.87	13,490	0.110	1484	40	3.0%				
	2	S. Everett High Rd MP 3.690	Westfield Dr 4.527	0.84	12,990	0.100	1299	45	3.0%	23.6	78.9	N/A	E
	3	Westfield Dr 4.527	Hitch Rd 7.254	2.73	12,990	0.100	1299	45	3.0%	23.4	78.9	N/A	E
	4	Hitch Rd 7.254	End of Study Area 7.990	0.74	8,520	0.100	852	45	7.0%	26.1	70.8	N/A	E

Table 7: 2015 Build Corridor (Alternatives A/C) Levels of Service (cont.)

Route	Section	Begin Milepoint	End Milepoint	Section Length (miles)	2015 ADT	K-Factor	2015 DHV	Posted Speed Limit (MPH)	% Trucks and Buses	Estimated Travel Speed (MPH)	% Time Spent Following	Density (pc/mi/in)	LOS
E. Broadway / Old Knoxville Highway (SR 33)	1	Beginning of Study Area MP 7.854	Montgomery Lane MP 10.201	2.35	38,510	0.100	3851	50	9.0%	49.3	N/A	32.0	D
	2	Montgomery Lane MP 10.201	Hall Rd MP 12.340	2.14	19,900	0.100	1990	30	9.0%				
	3	Hall Rd MP 12.340	Wildwood Rd MP 14.206	1.87	11,300	0.100	1130	30	3.0%				
	4	Wildwood Rd MP 14.206	Hunt Rd MP 15.470	1.26	11,210	0.100	1121	40	3.0%				
	5	Hunt Rd MP 15.470	Pellissippi Pky MP 15.920	0.45	38,200	0.110	4202	40	4.0%				
	6	Pellissippi Pky MP 15.920	Sam Houston School Rd MP 16.370	0.45	15,360	0.110	1690	40	2.0%				
	7	Sam Houston School Rd MP 16.370	County Line MP 20.660	4.29	15,360	0.120	1843	50	2.0%	27.6	87.6	N/A	E
Alcoa Highway (SR 115 / US 129)	1	Broadway Ave MP 10.450	Lamar Alexander Pkwy (SR 73/US 321) MP 11.340	0.89	31,840	0.100	3184	50	10.0%	49.0	N/A	25.7	C
	2	Lamar Alexander Pkwy (SR 73/US 321) MP 11.340	Louisville Rd (MP 13.020)	2.94	46,180	0.100	4618	55	8.0%	53.5	N/A	30.1	D
	3	Louisville Rd (MP 13.020)	Hall Rd (SR 35) MP 14.280	1.26	40,350	0.100	4035	55	8.0%	54.3	N/A	25.4	C
	4	Hall Rd (SR 35) MP 14.280	Hunt Rd MP 15.020	0.74	57,950	0.070	4057	55	8.0%	53.3	N/A	30.8	D
	5	Hunt Rd MP 15.020	Relocated Alcoa Hwy MP 16.000	0.98	59,510	0.100	5951	50	8.0%	45.8	N/A	-	F
	6	Relocated Alcoa Hwy MP 16.000	Pellissippi Pky MP 17.660	2.64	35,480	0.100	3548	50	8.0%	45.8	N/A	24.6	C
	7	Pellissippi Pky MP 17.660	County Line MP 20.400	2.74	31,870	0.110	3506	55	8.0%	51.8	N/A	22.7	C
Sam Houston	1	SR 33 MP 0.000	Wildwood Rd MP 2.650	2.65	-	-	-	-	-	-	-	-	-
Peppermint Road	1	Wildwood Rd MP 0.000	Sevierville Rd MP 1.100	1.10	-	-	-	-	-	-	-	-	-
Hitch Road	1	Sevierville Rd MP 1.202	Davis Ford Rd MP 0.000	1.20	-	-	-	-	-	-	-	-	-
Helton Road	1	Davis Ford Rd MP 0.875	Lamar Alexander Pkwy MP 0.000	0.88	-	-	-	-	-	-	-	-	-
Tuckaleechee Pike	1	Lamar Alexander Pkwy 4.490	Hubbard School Rd MP 4.189	0.30	-	-	-	-	-	-	-	-	-
Relocated Alcoa Highway	1	Alcoa Highway (SR 115 / US 129)	Pellissippi Pky	Not Determined	30,170	0.100	3017	55	8.0%	52.4	N/A	15.5	B
	2	Pellissippi Pky	Alcoa Highway (SR 115 / US 129)	Not Determined	50,300	0.100	5030	55	8.0%	52.4	N/A	25.9	C

Table 8: 2015 Build Corridor (Alternative D) Level of Service

Route	Section	Begin Milepoint	End Milepoint	Section Length (miles)	2015ADT	K-Factor	2015 DHV	Posted Speed Limit (MPH)	% Trucks and Buses	Estimated Travel Speed (MPH)	% Time Spent Following	Density (pc/mi/in)	LOS
Wildwood Road	1	E. Broadway/Old Knoxville Hwy (SR 33) MP 0.000	Reservoir Rd MP 1.309	1.31	8,360	0.110	920	45	2.0%	29.1	71.0	N/A	D
	2	Reservoir Rd MP 1.309	Sam Houston School Rd MP 2.650	1.34	8,360	0.110	920	45	2.0%	29.1	71.0	N/A	D
	3	Sam Houston School Rd MP 2.650	End of Study Area MP 4.740	2.09	5,760	0.110	634	45	3.0%	31.1	61.6	N/A	C
Pellissippi Parkway	1	Topside Rd MP 0.810	Alcoa Hwy (SR 115/US 129) MP 2.240	1.43	39,830	0.120	4780	60	7.0%	57.5	N/A	25.5	C
	2	Alcoa Hwy (SR 115/US 129) MP 2.240	Relocated Alcoa Highway MP 3.240	1.00	24,260	0.130	3154	60	5.0%	57.5	N/A	16.4	B
	3	Relocated Alcoa Highway MP 3.240	E. Broadway/Old Knoxville Hwy (SR 33) MP 4.710	1.47	38,860	0.130	5052	60	5.0%	57.5	N/A	26.2	D
Lamar Alexander Parkway (SR 73 / US 321)	1	Beginning of Study Area MP 8.250	Alcoa Hwy (SR 115/US 129) MP 10.570	2.32	25,320	0.110	2785	55	7.0%	54.0	N/A	16.8	B
	2	Alcoa Hwy (SR 115/US 129) MP 10.570	E. Broadway/Old Knoxville Hwy (SR 33) MP 11.650	1.08	27,930	0.100	2793	45	6.0%	45.0	N/A	21.0	C
	3	E. Broadway/Old Knoxville Hwy (SR 33) MP 11.650	Jones Ave MP 12.526	0.87	37,700	0.100	3770	40	6.0%				
	4	Jones Ave MP 12.520	Merritt Rd MP 13.980	1.46	25,850	0.100	2585	50	3.0%	50.0	N/A	19.5	C
	5	Merritt Rd MP 13.980	Tuckaleechee Pk MP 17.020	3.04	19,620	0.100	1962	50	3.0%	50.0	N/A	11.6	B
	6	Tuckaleechee Pk MP 17.020	Tuckaleechee Pk MP 17.320	0.30	21,930	0.100	2193	55	5.0%	53.0	N/A	16.1	B
	7	Tuckaleechee Pk MP 17.320	Melrose Station Rd MP 20.020	2.70	20,220	0.100	2022	55	5.0%	53.0	N/A	12.8	B
	8	Melrose Station Rd MP 20.020	Foothills Pkwy MP 22.400	2.38	13,580	0.100	1358	55	5.0%	53.0	N/A	8.5	A
Hall Road (SR 35)	1	Alcoa Hwy (SR 115/US 129) MP 0.000	Bessemer St MP 1.520	1.52	21,720	0.100	2172	45	2.0%	45.0	N/A	16.0	B
	2	Bessemer St MP 1.520	E. Broadway/Old Knoxville Hwy (SR 33) MP 2.590	1.07	26,660	0.100	2666	35	2.0%				
Washington Street (SR 35)	1	E. Broadway/Old Knoxville Hwy (SR 33) MP 2.590	US 411 (SR 35) MP 2.820	0.23	25,610	0.100	2561	30	3.0%				
	2	US 411 (SR 35) MP 0.000	Lamar Alexander Pkwy (SR 73/US 321) MP 0.160	0.16	36,200	0.100	3620	30	2.0%				
US 411 (SR 35)	1	Washington St (SR 35) MP 2.820	S. Everett High Rd MP 3.690	0.87	13,490	0.110	1484	40	3.0%				
	2	S. Everett High Rd MP 3.690	Westfield Dr 4.527	0.84	13,220	0.100	1322	45	3.0%	23.4	79.3	N/A	E
	3	Westfield Dr 4.527	Hitch Rd 7.254	2.73	13,220	0.100	1322	45	3.0%	23.2	79.3	N/A	E
	4	Hitch Rd 7.254	End of Study Area 7.990	0.74	8,750	0.100	875	45	7.0%	25.9	71.5	N/A	E

Table 8: 2015 Build Corridor (Alternative D) Level of Service (cont.)

Route	Section	Begin Milepoint	End Milepoint	Section Length (miles)	2015 ADT	K-Factor	2015 DHV	Posted Speed Limit (MPH)	% Trucks and Buses	Estimated Travel Speed (MPH)	% Time Spent Following	Density (pc/mi/n)	LOS
E. Broadway / Old Knoxville Highway (SR 33)	1	Beginning of Study Area MP 7.854	Montgomery Lane MP 10.201	2.35	38,960	0.100	3896	50	9.0%	49.2	N/A	32.4	D
	2	Montgomery Lane MP 10.201	Hall Rd MP 12.340	2.14	20,390	0.100	2039	30	9.0%				
	3	Hall Rd MP 12.340	Wildwood Rd MP 14.206	1.87	12,820	0.100	1282	30	3.0%				
	4	Wildwood Rd MP 14.206	Hunt Rd MP 15.470	1.26	12,860	0.100	1286	40	3.0%				
	5	Hunt Rd MP 15.470	Pellissippi Pky MP 15.920	0.45	30,940	0.110	3403	40	4.0%				
	6	Pellissippi Pky MP 15.920	Sam Houston School Rd MP 16.370	0.45	18,680	0.110	2055	40	2.0%				
	7	Sam Houston School Rd MP 16.370	County Line MP 20.660	4.29	7,530	0.120	904	50	4.0%	33.9	73.1	N/A	E
Alcoa Highway (SR 115 / US 129)	1	Broadway Ave MP 10.450	Lamar Alexander Pkwy (SR 73/US 321) MP 11.340	0.89	32,000	0.100	3200	50	10.0%	49.0	N/A	25.9	C
	2	Lamar Alexander Pkwy (SR 73/US 321) MP 11.340	Louisville Rd (MP 13.020)	2.94	47,680	0.100	4768	55	8.0%	53.2	N/A	31.2	D
	3	Louisville Rd (MP 13.020)	Hall Rd (SR 35) MP 14.280	1.26	44,570	0.100	4457	55	8.0%	53.8	N/A	28.3	D
	4	Hall Rd (SR 35) MP 14.280	Hunt Rd MP 15.020	0.74	63,780	0.070	4465	55	8.0%	52.4	N/A	34.5	D
	5	Hunt Rd MP 15.020	Relocated Alcoa Hwy MP 16.000	0.98	62,470	0.100	6247	50	8.0%	45.8	N/A	-	F
	6	Relocated Alcoa Hwy MP 16.000	Pellissippi Pky MP 17.660	2.64	33,780	0.100	3378	50	8.0%	45.8	N/A	23.4	C
	7	Pellissippi Pky MP 17.660	County Line MP 20.400	2.74	31,190	0.110	3431	55	8.0%	51.8	N/A	22.3	C
Sam Houston	1	SR 33 MP 0.000	Wildwood Rd MP 2.650	2.65	15,740	0.160	2518	50	2.0%	27.0	94.4	N/A	F
Peppermint Road	1	Wildwood Rd MP 0.000	Sevierville Rd MP 1.100	1.10	20,890	0.150	3134	50	2.0%	-	98.2	N/A	F
Hitch Road	1	Sevierville Rd MP 1.202	Davis Ford Rd MP 0.000	1.20	13,880	0.150	2082	50	1.0%	30.8	90.3	N/A	E
Helton Road	1	Davis Ford Rd MP 0.875	Lamar Alexander Pkwy MP 0.000	0.88	13,880	0.150	2082	50	1.0%	30.8	90.3	N/A	E
Tuckaleechee Pike	1	Lamar Alexander Pkwy 4.490	Hubbard School Rd MP 4.189	0.30	2,860	0.110	315	50	1.0%	41.2	51.6	N/A	D
Relocated Alcoa Highway	1	Alcoa Highway (SR 115 / US 129)	Pellissippi Pky	Not Determined	33,570	0.100	3357	55	8.0%	52.4	N/A	17.3	B
	2	Pellissippi Pky	Alcoa Highway (SR 115 / US 129)	Not Determined	44,720	0.100	4472	55	8.0%	52.4	N/A	23.0	C

Table 9: 2035 Build Corridor (Alternatives A/C) Levels of Service

Route	Section	Begin Milepoint	End Milepoint	Section Length (miles)	2035 ADT	K-Factor	2035 DHV	Posted Speed Limit (MPH)	% Trucks and Buses	Estimated Travel Speed (MPH)	% Time Spent Following	Density (pc/mi/ln)	LOS
Wildwood Road	1	E. Broadway/Old Knoxville Hwy (SR 33) MP 0.000	Reservoir Rd MP 1.309	1.31	4,720	0.110	519	45	2.0%	31.8	58.6	N/A	C
	2	Reservoir Rd MP 1.309	Sam Houston School Rd MP 2.650	1.34	4,720	0.110	519	45	2.0%	31.8	58.6	N/A	C
	3	Sam Houston School Rd MP 2.650	End of Study Area MP 4.740	2.09	4,720	0.110	519	45	2.0%	31.8	58.6	N/A	C
Pellissippi Parkway	1	Topside Rd MP 0.810	Alcoa Hwy (SR 115/US 129) MP 2.240	1.43	63,690	0.120	7643	60	7.0%	57.5	N/A	-	F
	2	Alcoa Hwy (SR 115/US 129) MP 2.240	Relocated Alcoa Highway MP 3.240	1.00	28,410	0.130	3693	60	5.0%	57.5	N/A	19.2	C
	3	Relocated Alcoa Highway MP 3.240	E. Broadway/Old Knoxville Hwy (SR 33) MP 4.710	1.47	76,720	0.130	9974	60	5.0%	57.5	N/A	-	F
	4	E. Broadway/Old Knoxville Hwy (SR 33) MP 4.710	US 411 (SR 35)	Not Determined	63,380	0.130	8239	60	2.0%	57.5	N/A	-	F
	5	US 411 (SR 35)	Lamar Alexander Pkwy (SR 73 / US 321)	Not Determined	52,880	0.130	6874	60	2.0%	56.4	N/A	34.9	D
	6	Lamar Alexander Pkwy (SR 73 / US 321)	South of Lamar Alexander Pkwy (SR 73 / US 321)	Not Determined	16,980	0.130	2207	60	2.0%	57.5	N/A	11.0	A
Lamar Alexander Parkway (SR 73 / US 321)	1	Beginning of Study Area MP 8.250	Alcoa Hwy (SR 115/US 129) MP 10.570	2.32	45,980	0.110	5058	55	7.0%	53.8	N/A	27.1	D
	2	Alcoa Hwy (SR 115/US 129) MP 10.570	E. Broadway/Old Knoxville Hwy (SR 33) MP 11.650	1.08	37,320	0.100	3732	45	6.0%	45.0	N/A	22.1	D
	3	E. Broadway/Old Knoxville Hwy (SR 33) MP 11.650	Jones Ave MP 12.526	0.87	49,000	0.100	4900	40	6.0%				
	4	Jones Ave MP 12.526	Merritt Rd MP 13.980	1.46	34,190	0.100	3419	50	3.0%	50.0	N/A	13.9	C
	5	Merritt Rd MP 13.980	Tuckaleechee Pk MP 17.020	3.04	34,560	0.100	3456	50	3.0%	50.0	N/A	19.6	C
	6	Tuckaleechee Pk MP 17.020	Tuckaleechee Pk MP 17.320	0.30	42,820	0.100	4282	55	4.0%	53.0	N/A	31.5	D
	7	Tuckaleechee Pk MP 17.320	Melrose Station Rd MP 20.020	2.70	37,000	0.100	3700	55	5.0%	53.0	N/A	23.3	C
	8	Melrose Station Rd MP 20.020	Foothills Pkwy MP 22.400	2.38	19,940	0.100	1994	55	5.0%	53.0	N/A	12.6	B
Hall Road (SR 35)	1	Alcoa Hwy (SR 115/US 129) MP 0.000	Bessemer St MP 1.520	1.52	17,730	0.100	1773	45	2.0%	45.0	N/A	13.1	B
	2	Bessemer St MP 1.520	E. Broadway/Old Knoxville Hwy (SR 33) MP 2.590	1.07	21,520	0.100	2152	35	2.0%				
Washington Street (SR 35)	1	E. Broadway/Old Knoxville Hwy (SR 33) MP 2.590	US 411 (SR 35) MP 2.820	0.23	22,090	0.100	2209	30	3.0%				
	2	US 411 (SR 35) MP 0.000	Lamar Alexander Pkwy (SR 73/US 321) MP 0.160	0.16	33,060	0.100	3306	30	2.0%				
US 411 (SR 35)	1	Washington St (SR 35) MP 2.820	S. Everett High Rd MP 3.690	0.87	14,920	0.110	1641	40	3.0%				
	2	S. Everett High Rd MP 3.690	Westfield Dr 4.527	0.84	13,610	0.100	1361	45	3.0%	23.1	80.1	N/A	E
	3	Westfield Dr 4.527	Hitch Rd 7.254	2.73	13,610	0.100	1361	45	3.0%	22.9	80.1	N/A	E
	4	Hitch Rd 7.254	End of Study Area 7.990	0.74	10,650	0.100	1065	45	7.0%	25.2	74.0	N/A	E

Table 9: 2035 Build Corridor (Alternatives A/C) Levels of Service (cont.)

Route	Section	Begin Milepoint	End Milepoint	Section Length (miles)	2035 ADT	K-Factor	2035 DHV	Posted Speed Limit (MPH)	% Trucks and Buses	Estimated Travel Speed (MPH)	% Time Spent Following	Density (pc/mi/ln)	LOS
E. Broadway / Old Knoxville Highway (SR 33)	1	Beginning of Study Area MP 7.854	Montgomery Lane MP 10.201	2.35	46,770	0.100	4677	50	9.0%	47.1	N/A	40.6	E
	2	Montgomery Lane MP 10.201	Hall Rd MP 12.340	2.14	30,080	0.100	3008	30	9.0%				
	3	Hall Rd MP 12.340	Wildwood Rd MP 14.206	1.87	18,550	0.100	1855	30	3.0%				
	4	Wildwood Rd MP 14.206	Hunt Rd MP 15.470	1.26	18,350	0.100	1835	40	3.0%				
	5	Hunt Rd MP 15.470	Pellissippi Pky MP 15.920	0.45	74,860	0.110	8235	40	4.0%				
	6	Pellissippi Pky MP 15.920	Sam Houston School Rd MP 16.370	0.45	27,280	0.110	3001	40	2.0%				
	7	Sam Houston School Rd MP 16.370	County Line MP 20.660	4.29	27,280	0.120	3274	50	2.0%	-	99.1	N/A	F
Alcoa Highway (SR 115 / US 129)	1	Broadway Ave MP 10.450	Lamar Alexander Pkwy (SR 73/US 321) MP 11.340	0.89	37,250	0.100	3725	50	10.0%	48.8	N/A	30.2	D
	2	Lamar Alexander Pkwy (SR 73/US 321) MP 11.340	Louisville Rd (MP 13.020)	2.94	53,740	0.100	5374	55	8.0%	52.0	N/A	36.0	E
	3	Louisville Rd (MP 13.020)	Hall Rd (SR 35) MP 14.280	1.26	44,430	0.100	4443	55	8.0%	53.9	N/A	28.2	D
	4	Hall Rd (SR 35) MP 14.280	Hunt Rd MP 15.020	0.74	60,970	0.070	4268	55	8.0%	54.2	N/A	26.1	D
	5	Hunt Rd MP 15.020	Relocated Alcoa Hwy MP 16.000	0.98	67,780	0.100	6778	50	8.0%	45.8	N/A	-	F
	6	Relocated Alcoa Hwy MP 16.000	Pellissippi Pky MP 17.660	2.64	39,980	0.100	3998	50	8.0%	45.8	N/A	27.7	D
	7	Pellissippi Pky MP 17.660	County Line MP 20.400	2.74	30,120	0.110	3313	55	8.0%	51.8	N/A	21.5	C
Sam Houston	1	SR 33 MP 0.000	Wildwood Rd MP 2.650	2.65	-	-	-	-	-	-	-	-	-
Peppermint Road	1	Wildwood Rd MP 0.000	Sevierville Rd MP 1.100	1.10	-	-	-	-	-	-	-	-	-
Hitch Road	1	Sevierville Rd MP 1.202	Davis Ford Rd MP 0.000	1.20	-	-	-	-	-	-	-	-	-
Helton Road	1	Davis Ford Rd MP 0.875	Lamar Alexander Pkwy MP 0.000	0.88	-	-	-	-	-	-	-	-	-
Tuckaleechee Pike	1	Lamar Alexander Pkwy 4.490	Hubbard School Rd MP 4.189	0.30	-	-	-	-	-	-	-	-	-
Relocated Alcoa Highway	1	Alcoa Highway (SR 115 / US 129)	Pellissippi Pky	Not Determined	36,690	0.100	3669	55	8.0%	52.4	N/A	18.9	C
	2	Pellissippi Pky	Alcoa Highway (SR 115 / US 129)	Not Determined	65,930	0.100	6593	55	8.0%	50.6	N/A	35.1	E

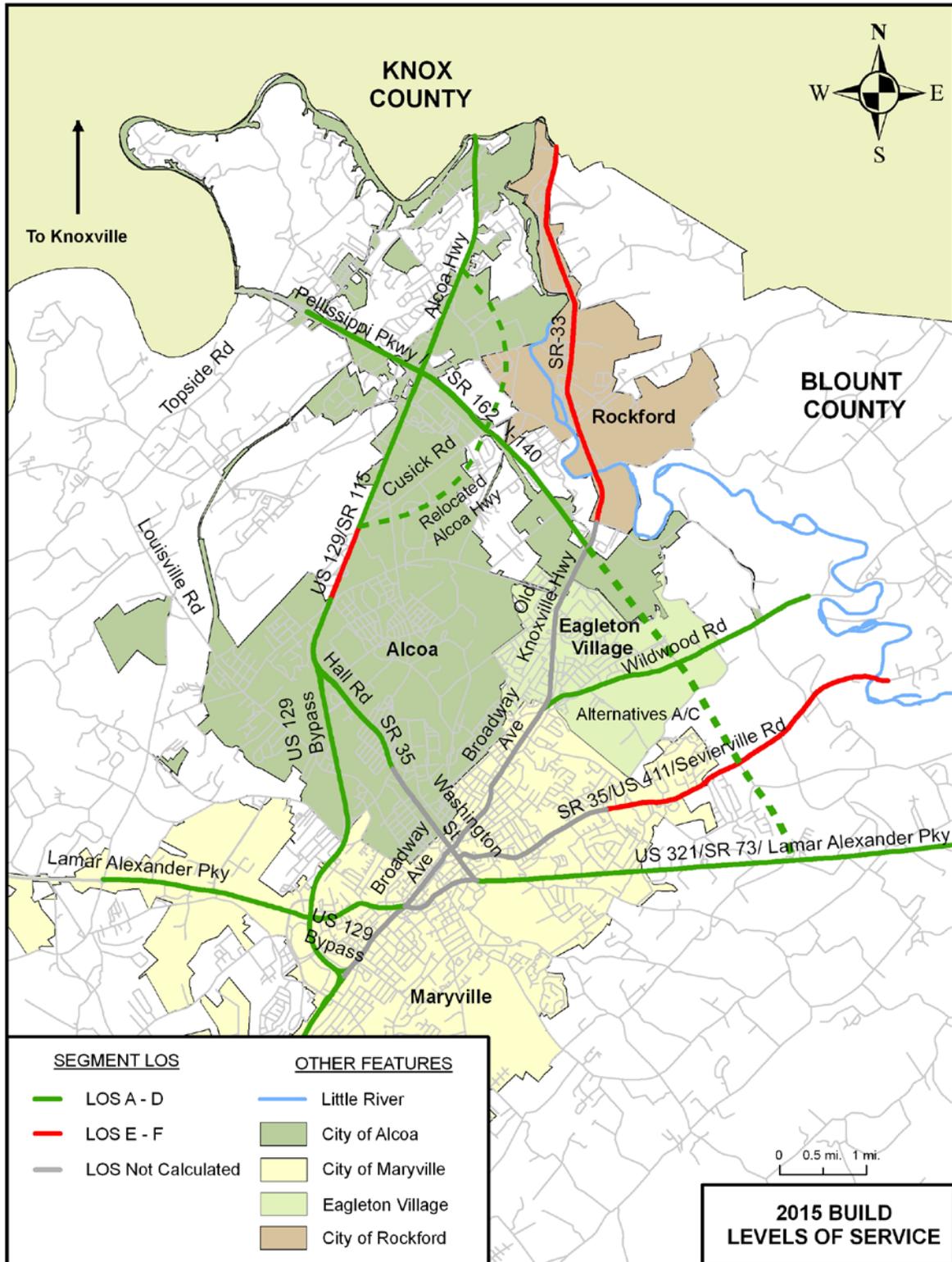
Table 10: 2035 Build Corridor (Alternative D) Level of Service

Route	Section	Begin Milepoint	End Milepoint	Section Length (miles)	2035 ADT	K-Factor	2035 DHV	Posted Speed Limit (MPH)	% Trucks and Buses	Estimated Travel Speed (MPH)	% Time Spent Following	Density (pc/mi/ln)	LOS
Wildwood Road	1	E. Broadway/Old Knoxville Hwy (SR 33) MP 0.000	Reservoir Rd MP 1.309	1.31	15,520	0.110	1707	45	2.0%	23.5	85.4	N/A	E
	2	Reservoir Rd MP 1.309	Sam Houston School Rd MP 2.650	1.34	15,520	0.110	1707	45	2.0%	23.5	85.4	N/A	E
	3	Sam Houston School Rd MP 2.650	End of Study Area MP 4.740	2.09	8,050	0.110	886	45	3.0%	29.2	70.1	N/A	D
Pellissippi Parkway	1	Topside Rd MP 0.810	Alcoa Hwy (SR 115/US 129) MP 2.240	1.43	59,740	0.120	7169	60	7.0%	52.6	N/A	41.8	E
	2	Alcoa Hwy (SR 115/US 129) MP 2.240	Relocated Alcoa Highway MP 3.240	1.00	41,990	0.130	5459	60	5.0%	57.5	N/A	28.3	D
	3	Relocated Alcoa Highway MP 3.240	E. Broadway/Old Knoxville Hwy (SR 33) MP 4.710	1.47	61,800	0.130	8034	60	5.0%	57.5	N/A	-	F
Lamar Alexander Parkway (SR 73 / US 321)	1	Beginning of Study Area MP 8.250	Alcoa Hwy (SR 115/US 129) MP 10.570	2.32	35,290	0.110	3882	55	7.0%	54.0	N/A	23.4	C
	2	Alcoa Hwy (SR 115/US 129) MP 10.570	E. Broadway/Old Knoxville Hwy (SR 33) MP 11.650	1.08	34,260	0.100	3426	45	6.0%	45.0	N/A	25.8	C
	3	E. Broadway/Old Knoxville Hwy (SR 33) MP 11.650	Jones Ave MP 12.526	0.87	45,190	0.100	4519	40	6.0%				
	4	Jones Ave MP 12.520	Merritt Rd MP 13.980	1.46	32,100	0.100	3210	50	3.0%	50.0	N/A	24.2	C
	5	Merritt Rd MP 13.980	Tuckaleechee Pk MP 17.020	3.04	32,540	0.100	3254	50	3.0%	50.0	N/A	19.3	C
	6	Tuckaleechee Pk MP 17.020	Tuckaleechee Pk MP 17.320	0.30	36,740	0.100	3674	55	5.0%	52.9	N/A	26.9	D
	7	Tuckaleechee Pk MP 17.320	Melrose Station Rd MP 20.020	2.70	37,550	0.100	3755	55	5.0%	53.0	N/A	23.7	C
	8	Melrose Station Rd MP 20.020	Foothills Pkwy MP 22.400	2.38	20,490	0.100	2049	55	5.0%	53.0	N/A	12.9	B
Hall Road (SR 35)	1	Alcoa Hwy (SR 115/US 129) MP 0.000	Bessemer St MP 1.520	1.52	23,160	0.100	2316	45	2.0%	45.0	N/A	17.1	B
	2	Bessemer St MP 1.520	E. Broadway/Old Knoxville Hwy (SR 33) MP 2.590	1.07	28,160	0.100	2816	35	2.0%				
Washington Street (SR 35)	1	E. Broadway/Old Knoxville Hwy (SR 33) MP 2.590	US 411 (SR 35) MP 2.820	0.23	28,360	0.100	2836	30	3.0%				
	2	US 411 (SR 35) MP 0.000	Lamar Alexander Pkwy (SR 73/US 321) MP 0.160	0.16	40,030	0.100	4003	30	2.0%				
US 411 (SR 35)	1	Washington St (SR 35) MP 2.820	S. Everett High Rd MP 3.690	0.87	14,920	0.110	1641	40	3.0%				
	2	S. Everett High Rd MP 3.690	Westfield Dr 4.527	0.84	13,550	0.100	1355	45	3.0%	23.1	80.0	N/A	E
	3	Westfield Dr 4.527	Hitch Rd 7.254	2.73	13,550	0.100	1355	45	3.0%	23.0	80.0	N/A	E
	4	Hitch Rd 7.254	End of Study Area 7.990	0.74	10,280	0.100	1028	45	7.0%	25.4	73.1	N/A	E

Table 10: 2035 Build Corridor (Alternative D) Level of Service (cont.)

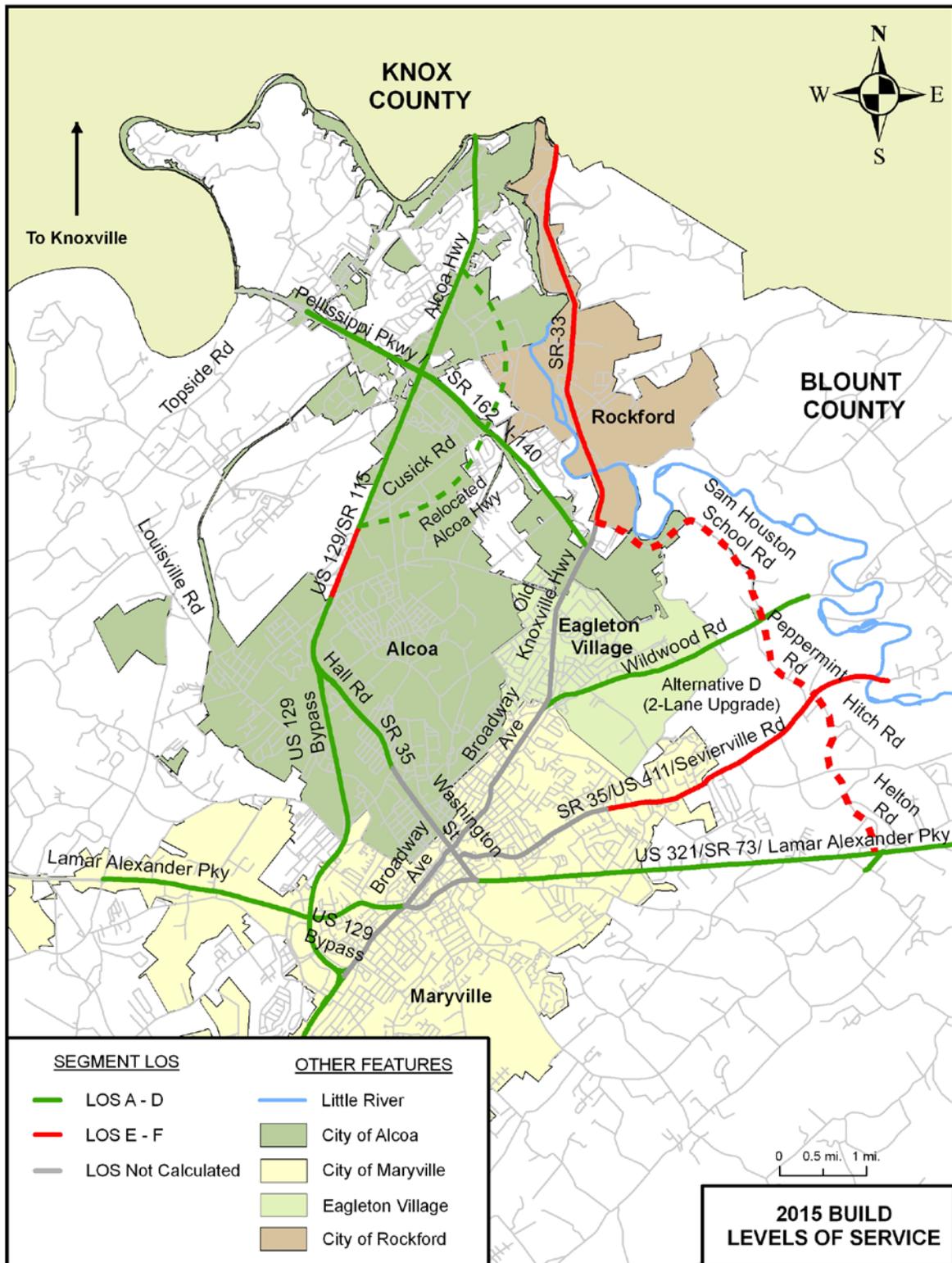
Route	Section	Begin Milepoint	End Milepoint	Section Length (miles)	2035 ADT	K-Factor	2035 DHV	Posted Speed Limit (MPH)	% Trucks and Buses	Estimated Travel Speed (MPH)	% Time Spent Following	Density (pc/mi/ln)	LOS
E. Broadway / Old Knoxville Highway (SR 33)	1	Beginning of Study Area MP 7.854	Montgomery Lane MP 10.201	2.35	46,770	0.100	4677	50	9.0%	47.1	N/A	40.6	E
	2	Montgomery Lane MP 10.201	Hall Rd MP 12.340	2.14	29,740	0.100	2974	30	9.0%				
	3	Hall Rd MP 12.340	Wildwood Rd MP 14.206	1.87	24,400	0.100	2440	30	3.0%				
	4	Wildwood Rd MP 14.206	Hunt Rd MP 15.470	1.26	23,550	0.100	2355	40	3.0%				
	5	Hunt Rd MP 15.470	Pellissippi Pky MP 15.920	0.45	61,210	0.110	6733	40	4.0%				
	6	Pellissippi Pky MP 15.920	Sam Houston School Rd MP 16.370	0.45	32,790	0.110	3607	40	2.0%				
	7	Sam Houston School Rd MP 16.370	County Line MP 20.660	4.29	18,870	0.120	2264	50	4.0%	23.8	92.4	N/A	E
Alcoa Highway (SR 115 / US 129)	1	Broadway Ave MP 10.450	Lamar Alexander Pkwy (SR 73/US 321) MP 11.340	0.89	38,700	0.100	3870	50	10.0%	48.5	N/A	31.6	D
	2	Lamar Alexander Pkwy (SR 73/US 321) MP 11.340	Louisville Rd (MP 13.020)	2.94	55,120	0.100	5512	55	8.0%	51.6	N/A	37.2	E
	3	Louisville Rd (MP 13.020)	Hall Rd (SR 35) MP 14.280	1.26	47,940	0.100	4794	55	8.0%	53.3	N/A	30.8	D
	4	Hall Rd (SR 35) MP 14.280	Hunt Rd MP 15.020	0.74	68,550	0.070	4799	55	8.0%	51.5	N/A	37.7	E
	5	Hunt Rd MP 15.020	Relocated Alcoa Hwy MP 16.000	0.98	69,210	0.100	6921	50	8.0%	45.8	N/A	-	F
	6	Relocated Alcoa Hwy MP 16.000	Pellissippi Pky MP 17.660	2.64	49,800	0.100	4980	50	8.0%	45.0	N/A	35.1	E
	7	Pellissippi Pky MP 17.660	County Line MP 20.400	2.74	44,380	0.110	4882	55	8.0%	50.7	N/A	32.3	D
Sam Houston	1	SR 33 MP 0.000	Wildwood Rd MP 2.650	2.65	20,840	0.160	3334	50	2.0%	-	99.1	N/A	F
Peppermint Road	1	Wildwood Rd MP 0.000	Sevierville Rd MP 1.100	1.10	27,550	0.150	4133	50	2.0%	-	100.0	N/A	F
Hitch Road	1	Sevierville Rd MP 1.202	Davis Ford Rd MP 0.000	1.20	21,850	0.150	3278	50	1.0%	-	98.9	N/A	F
Helton Road	1	Davis Ford Rd MP 0.875	Lamar Alexander Pkwy MP 0.000	0.88	21,850	0.150	3278	50	1.0%	-	98.9	N/A	F
Tuckaleechee Pike	1	Lamar Alexander Pkwy 4.490	Hubbard School Rd MP 4.189	0.30	4,760	0.110	524	50	1.0%	40.5	58.7	N/A	D
Relocated Alcoa Highway	1	Alcoa Highway (SR 115 / US 129)	Pellissippi Pky	Not Determined	33,430	0.100	3343	55	8.0%	52.4	N/A	17.3	B
	2	Pellissippi Pky	Alcoa Highway (SR 115 / US 129)	Not Determined	49,160	0.100	4916	55	8.0%	52.4	N/A	25.3	C

Figure 7: 2015 Segment Build Alternative A/C Levels of Service



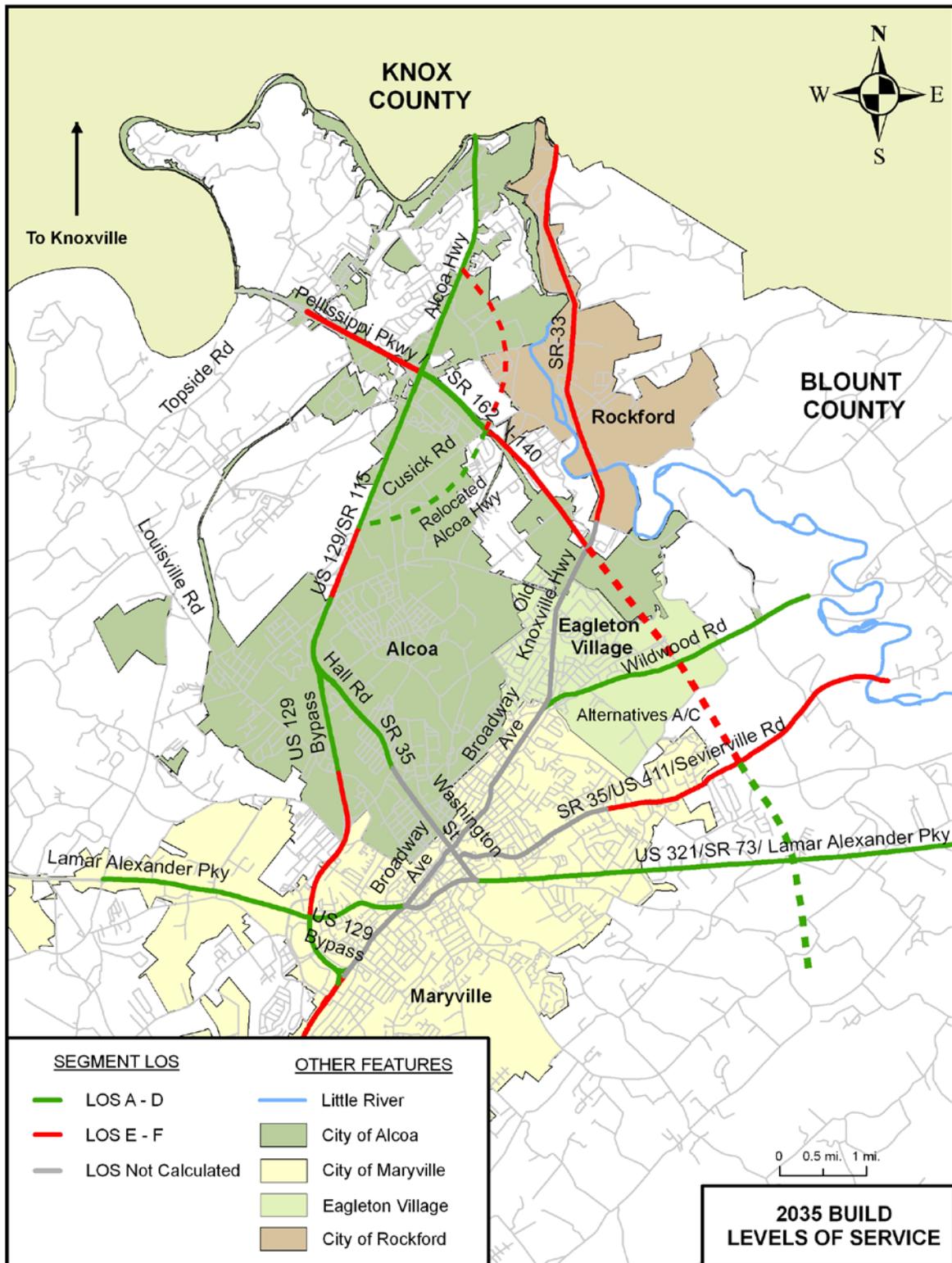
Note: The Relocated Alcoa Highway and Pellissippi Parkway Extension is shown for conceptual purposes only; no specific alignment or location has been determined.

Figure 8: 2015 Segment Build Alternative D Levels of Service



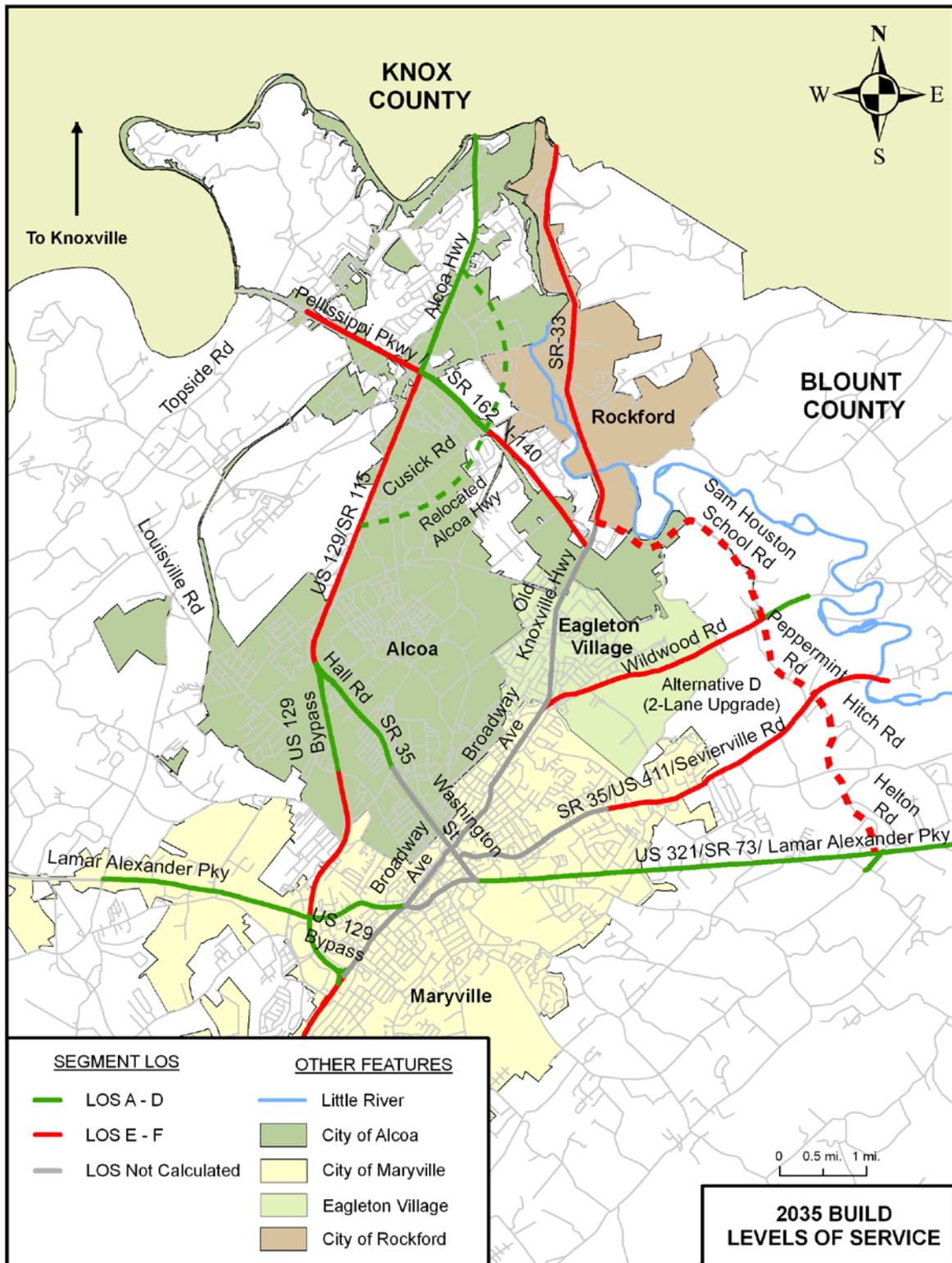
Note: The Relocated Alcoa Highway is shown for conceptual purposes only; no specific alignment or location has been determined.

Figure 9: 2035 Segment Build Alternative A/C Levels of Service



Note: The Relocated Alcoa Highway and Pellissippi Parkway Extension is shown for conceptual purposes only; no specific alignment or location has been determined.

Figure 10: 2035 Segment Build Alternative D Levels of Service



Note: The Relocated Alcoa Highway is shown for conceptual purposes only; no specific alignment or location has been determined.

3.5 Summary of Corridor Level of Service Results

To assist in the comparison of alternatives, the following tables were developed. **Table 11** lists the levels of service for the proposed alternatives (Alternatives A/C and D) compared to the No-Build Alternative. **Table 12** lists the corresponding levels of service for the other study area roadways for the No-Build Alternative as well as the Build Alternatives (A/C and D).

Table 11: Alternative Corridor Levels of Service Summary

Route	Section	Begin Milepoint	End Milepoint	Existing	2015 No-Build	2035 No-Build	2015 Build Alternative A/C	2035 Build Alternative A/C	2015 Build Alternative D	2035 Build Alternative D
Pellissippi Parkway	1	Topside Rd	Alcoa Hwy (SR 115/US 129)	C	D	F	D	F	C	E
	2	Alcoa Hwy (SR 115/US 129)	Relocated Alcoa Hwy	A	B	D	B	C	B	D
	3	Relocated Alcoa Hwy	E. Broadway / Old Knoxville Hwy (SR 33)	A	C	F	D	F	D	F
	4	E. Broadway/Old Knoxville Hwy (SR 33)	US 411 (SR 35)	Not Determined	Not Determined	Not Determined	C	F	Not Determined	Not Determined
	5	US 411 (SR 35)	Lamar Alexander Pkwy (SR 73/US 321)	Not Determined	Not Determined	Not Determined	B	D	Not Determined	Not Determined
	6	Lamar Alexander Pkwy (SR 73/US 321)	End of Study Area	Not Determined	Not Determined	Not Determined	Not Determined	A	Not Determined	Not Determined
Sam Houston School Rd/Peppermint Rd/Hitch Rd/Helton Rd	1	SR 33	Wildwood Rd	C	C	D	Not Determined	Not Determined	F	F
	2	Wildwood Rd	Sevierville Rd	A	B	B	Not Determined	Not Determined	F	F
	3	Sevierville Rd	Davis Ford Rd	A	A	A	Not Determined	Not Determined	E	F
	4	Davis Ford Rd	Lamar Alexander Pkwy	A	A	A	Not Determined	Not Determined	E	F
	5	Lamar Alexander Pkwy	Hubbard School Rd	Not Determined	B	B	Not Determined	Not Determined	D	D

Table 12: Study Area Roadway Corridor Levels of Service Summary

Route	Section	Begin Milepoint	End Milepoint	Existing	2015 No-Build	2035 No-Build	2015 Build Alternative A/C	2035 Build Alternative A/C	2015 Build Alternative D	2035 Build Alternative D
Wildwood Road	1	E. Broadway / Old Knoxville Hwy (SR 33)	Reservoir Rd	C	C	C	C	C	D	E
	2	Reservoir Rd	Sam Houston School Rd	C	C	C	C	C	D	E
	3	Sam Houston School Rd	End of Study Area	A	C	C	C	C	C	D
Lamar Alexander Parkway (SR 73 / US 321)	1	Beginning of Study Area	Alcoa Hwy (SR 115 / US 129)	B	C	D	C	D	B	C
	2	Alcoa Hwy (SR 115 / US 129)	E. Broadway / Old Knoxville Hwy (SR 33)	C	C	D	C	D	C	C
	3	E. Broadway / Old Knoxville Hwy (SR 33)	Jones Ave							
	4	Jones Ave	Meritt Rd	B	C	D	B	C	C	C
	5	Meritt Rd	Tuckaleechee Pk	A	B	C	B	C	B	C
	6	Tuckaleechee Pk	Tuckaleechee Pk	A	B	B	C	D	B	D
	7	Tuckaleechee Pk	Melrose Station Rd	A	B	C	B	C	B	C
	8	Melrose Station Rd	Foothills Pkwy	A	A	B	A	B	A	B
Hall Road (SR 35)	1	Alcoa Hwy (SR 115 / US 129)	Bessemer St	B	B	B	B	B	B	B
	2	Bessemer St	E. Broadway / Old Knoxville Hwy (SR 33)							
Washington Street (SR 35)	1	E. Broadway / Old Knoxville Hwy (SR 33)	US 411 (SR 35)							
	2	US 411 (SR 35)	Lamar Alexander Pkwy (SR 73 / US 321)							
US 411 (SR 35)	1	Washington St (SR 35)	S. Everett High Rd							
	2	S. Everett High Rd	Westfield Dr	E	E	E	E	E	E	E
	3	Westfield Dr	Hitch Rd	E	E	E	E	E	E	E
	4	Hitch Rd	End of Study Area	E	E	E	E	E	E	E
E. Broadway / Old Knoxville Highway (SR 33)	1	Beginning of Study Area	Montgomery Lane	C	D	E	D	E	D	E
	2	Montgomery Lane	Hall Rd							
	3	Hall Rd	Wildwood Rd							
	4	Wildwood Rd	Hunt Rd							
	5	Hunt Rd	Pellissippi Pkwy							
	6	Pellissippi Pkwy	Sam Houston School Rd							
	7	Sam Houston School Rd	County Line	E	E	F	E	F	E	E
Alcoa Highway (SR 115 / US 129)	1	Broadway Ave	Lamar Alexander Pkwy (SR 73 / US 321)	C	D	D	C	D	C	D
	2	Lamar Alexander Pkwy (SR 73 / US 321)	Louisville Rd	C	D	E	D	E	D	E
	3	Louisville Rd	Hall Rd (SR 35)	C	D	D	C	D	D	D
	4	Hall Rd (SR 35)	Hunt Rd	D	E	E	D	D	D	E
	5	Hunt Rd	Cusick Rd	E	F	F	F	F	F	F
	6	Cusick Rd	Pellissippi Pkwy	E	C	D	C	D	C	E
	7	Pellissippi Pkwy	County Line	D	B	C	C	C	C	D
Relocated Alcoa Highway	1	Alcoa Hwy (SR 115 / US 129)	Pellissippi Pky	Not Determined	B	C	B	C	B	B
	2	Pellissippi Pky	Alcoa Highway (SR 115 / US 129)	Not Determined	D	D	C	E	C	C

The following observations are made regarding the analysis provided in the previous tables:

- A review of the traffic operations under the No-Build scenario shows that traffic operations remain generally at an acceptable LOS (LOS D) or better on Lamar Alexander Parkway (US 321/SR 73) through 2035. Traffic operations also remain at or better than a LOS D on the local roads that would be used for Alternative D. Traffic operations decline on existing Pellissippi Parkway to below a desirable LOS just west of Alcoa Highway and between the Relocated Alcoa Highway and SR 33 in the year 2035. There are also poor traffic operations (below a LOS D) on Alcoa Highway in all analysis years. The specific sections that have a poor LOS change slightly due to the Relocated Alcoa Highway (i.e. improve near the new roadway and worsen slightly just south of the new roadway).
- Comparing the No-Build Alternative to the Build Alternatives (A/C and D) for the year 2015, there is little change in LOS among the three alternatives for Wildwood Road, Pellissippi Parkway, and Lamar Alexander Parkway (US 321/SR 73). All operate at or above an acceptable LOS.
- In 2015, traffic operations improve slightly on Alcoa Highway between Hall and Hunt Roads under both Build scenarios. This improvement can be attributed in part to the new Relocated Alcoa Highway project.
- For Alternative D in 2015, Sam Houston School Road, Peppermint Road, Hitch Road, and Helton Road all fall to LOS E and F.
- In 2035, Pellissippi Parkway has poor operations for the segments west of Alcoa Highway and between the Relocated Alcoa Highway and SR 33 for all three scenarios. In Build Alternative A/C, the new section of Pellissippi Parkway between SR 33 and US 411 is projected to operate at a LOS F.

To estimate the year when traffic operations drop to below the LOS D threshold for the section of the proposed Pellissippi Parkway Extension between SR 33 and US 411, **Table 13** was created. According to this analysis, this section of the Pellissippi Parkway Extension is projected to drop from LOS D to LOS E in the year 2029. It will reach LOS F in the year 2034.

- For Build Alternative D, several sections of Alcoa Highway and Wildwood Road would operate at a poor LOS (below LOS D). By comparison, these sections would operate acceptably under the No-Build and Build Alternative A/C in the year 2035.
- Sam Houston School Road, Peppermint Road, Hitch Road, and Helton Road all operate at a poor LOS in the year 2035 for Build Alternative D. The two lanes along these roadways as included in this alternative do not have the capacity to accommodate the additional traffic under the Build scenario.

Table 13: Failure Year for the Proposed Pellissippi Parkway Extension (Alternative A/C) between SR 33 and US 411

Year	Volume	DHV	LOS
2015	36,660	4,766	C
2016	37,672	4,897	C
2017	38,713	5,033	C
2018	39,782	5,172	C
2019	40,880	5,314	D
2020	42,009	5,461	D
2021	43,169	5,612	D
2022	44,361	5,767	D
2023	45,586	5,926	D
2024	46,845	6,090	D
2025	48,138	6,258	D
2026	49,467	6,431	D
2027	50,833	6,608	D
2028	52,237	6,791	D
2029	53,679	6,978	E
2030	55,162	7,171	E
2031	56,685	7,369	E
2032	58,250	7,572	E
2033	59,858	7,782	E
2034	61,511	7,996	F
2035	63,210	8,217	F

4.0 INTERSECTION LEVEL OF SERVICE ANALYSIS

A level of service analysis was also conducted at the intersection level for the No-Build Alternative and Build Alternatives (Alternatives A/C and D) for the years 2015 and 2035. Existing (2006) levels of service were determined for comparison purposes. The methodology and results are presented in the following sections.

4.1 Study Area Intersections

Traffic operations at the following existing intersections are likely to be impacted by the proposed Pellissippi Parkway Extension. **Figure 11** shows the location of each intersection, indicated by number as shown below.

1. SR 115 / US 129 @ I-140 / Pellissippi Parkway (Interchange)
2. SR 115 / US 129 @ SR 35 (Interchange)
3. SR 115 / US 129 @ SR 73 / US 321 (Signalized)
4. SR 33 / US 411 @ SR 15 / US 129 (Interchange)
5. SR 33 @ I-140 / Pellissippi Parkway (STOP Controlled)
6. SR 33 @ Wildwood Road (Signalized)
7. SR 33 / E. Broadway Avenue @ SR 35 / S. Washington Street (Signalized)
8. SR 33 @ SR 73 / US 321 (Signalized)
9. SR 35 / S. Washington Street @ Sevierville Road (Signalized)
10. S. Washington Street / SR 35 @ High Street / SR 35 (Signalized)
11. S. Washington Street @ SR 73 / US 321 (Signalized)
12. SR 73 / US 321 @ SR 335 / Old Glory Road (Signalized)

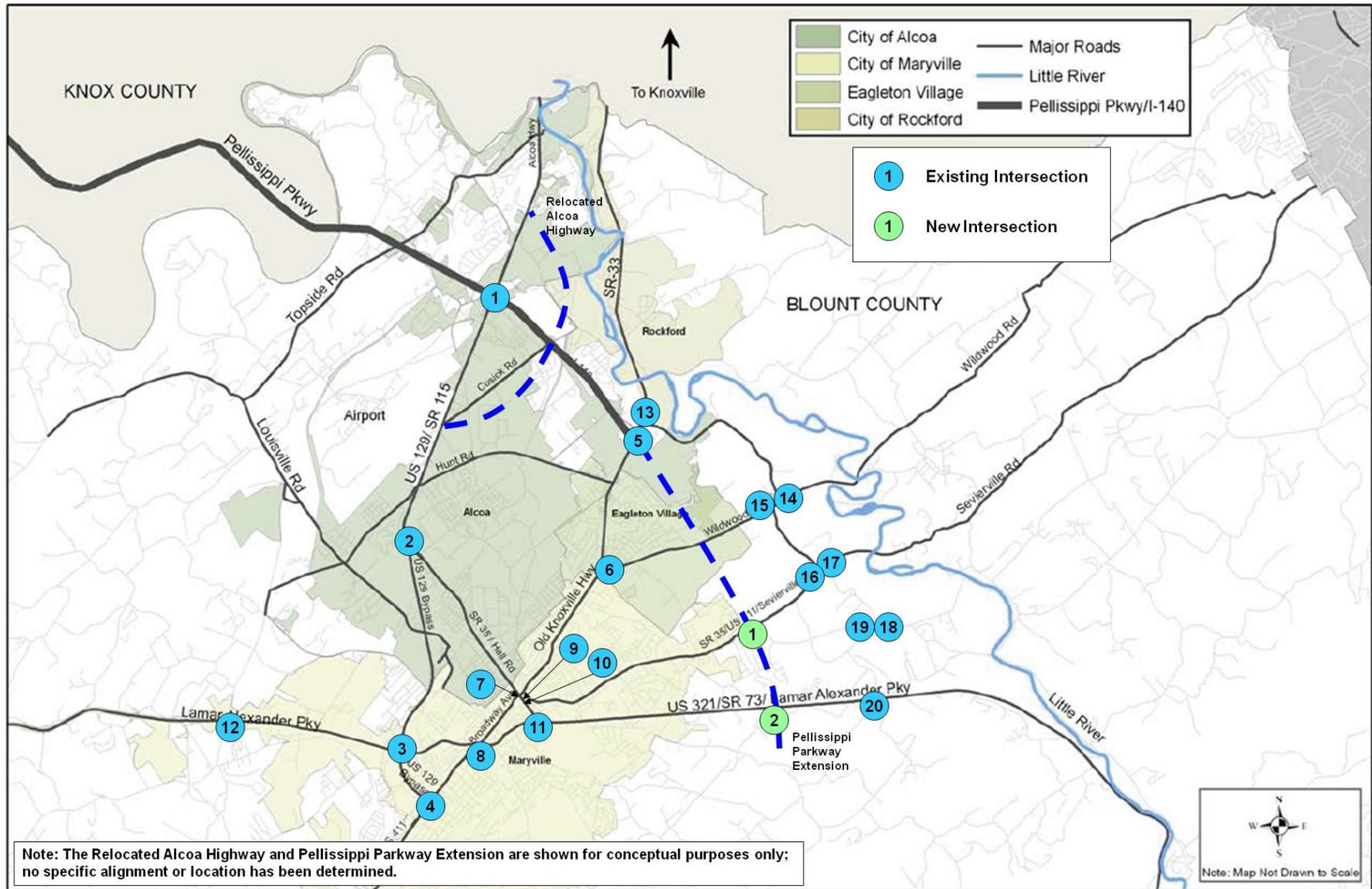
Three existing intersections that currently operate as an interchange without signal control were not evaluated as part of the level of service analysis (Intersections 1, 2 and 4 above). The highway segments surrounding the interchanges were evaluated as part of the previous segment analysis and provide an operational analysis.

The intersection of SR 33 at I-140 / Pellissippi Parkway is currently STOP controlled; however, a traffic signal is approved by TDOT for this location. Therefore, this intersection was evaluated as a STOP controlled intersection for the existing (2006) scenario and as a signalized intersection for the No-Build Alternative and Build Alternative D in the future years of 2015 and 2035. For the Build Alternative A/C, it was assumed that a typical diamond interchange would be created, thereby resulting in two new intersections. As this evaluation is for the planning stages of this project and no final design has been completed, the necessary traffic control and lane configuration to make the intersections operate at an acceptable level of service (if possible) was assumed. For both scenarios, the right turn movement from SR 33 to Pellissippi Parkway was assumed to have a separate ramp and would not be directed through the intersection to access Pellissippi Parkway.

In addition, two new intersections would be created by the proposed Pellissippi Parkway Extension. **Figure 11** shows the location of each new intersection, indicated by number as shown below.

1. Pellissippi Parkway Extension @ SR 35 / US 411 / Sevierville Road
2. Pellissippi Parkway Extension @ US 321

Figure 11: Intersection Location Map



For this analysis, a typical diamond interchange has been assumed for the Pellissippi Parkway Extension at SR 35 / US 411 / Sevierville Road interchange, resulting in the creation of two new intersections. Levels of service and delay were calculated for similar scenarios as discussed above for the SR 33 / I-140 interchange. The Pellissippi Parkway Extension at US 321 may include directional loop ramps and was not evaluated at this time.

As part of the Alternative D analysis, several intersections would be impacted and were included in the analysis. The following intersections were evaluated for the existing and No-Build Scenarios. **Figure 11** shows the location of each intersection, indicated by number as shown below:

- 13. SR 33 @ Sam Houston School Road (Signalized)
- 14. Sam Houston School Road @ Wildwood Road (STOP Controlled)
- 15. Peppermint Road @ Wildwood Road (STOP Controlled)
- 16. SR 35 / US 411 / Sevierville Road @ Peppermint Road (STOP Controlled)
- 17. SR 35 / US 411 / Sevierville Road @ Hitch Road / Peppermint Hills Drive (STOP Controlled)
- 18. Davis Ford Road @ Helton Road (STOP Controlled)
- 19. Davis Ford Road @ Hitch Road (STOP Controlled)
- 20. SR 73 / US 321 @ Helton Road / Tuckaleechee Pike (STOP Controlled)

Several of these intersections would be realigned as part of Alternative D and form the following intersections:

- 14/15. Wildwood Road @ Peppermint Road / Sam Houston School Road
- 16/17. SR 35 / US 411 / Sevierville Road @ Peppermint Road / Hitch Road
- 18/19. Davis Ford Road @ Hitch Road / Helton Road
- 20. SR 73 / US 321 @ Helton Road / Tuckaleechee Pike

4.2 Methodology

For this analysis, the Highway Capacity Software Plus package (HCS+) was used to assess the peak period traffic operating conditions. This software package implements the Highway Capacity Manual (HCM) intersection analysis method. For each study intersection, average vehicle delays were calculated as well as the resulting levels of service (LOS). For intersections, the Highway Capacity Manual 2000 defines levels of service based on the average delay due to signal or STOP control as shown in **Table 14**.

Table 14: LOS Criteria for Intersections

LOS	Signalized Intersections Control Delay (seconds per vehicle)	Unsignalized Intersections Control Delay (seconds per vehicle)
A	≤ 10	≤ 10
B	>10 – 20	>10 – 15
C	>20 – 35	>15 – 25
D	>35 – 55	>25 – 35
E	>55 – 80	>35 – 50
F	>80	>50

Source: Highway Capacity Manual (2000)

In general terms, a facility is considered to have reached its physical capacity at LOS E. TDOT typically uses LOS D as the threshold for acceptable traffic service for all but the more rural roads. Because of the urban character of the study area, LOS D is used as the threshold. Operations below this threshold are noted as undesirable and warrant improvement. LOS D corresponds to ≤ 55 seconds of delay per vehicle at a signalized intersection and ≤ 35 seconds of delay at an unsignalized intersection. (Refer to the HCM for more detail.)

4.3 Intersection Level of Service Results

Using the existing (2006 / 2008) and forecasted traffic volumes (2015 and 2035) from the Traffic Forecast Study completed for this project, intersection levels of service were developed for the existing (2006 / 2008), 2015 and 2035 No-Build, and the 2015 and 2035 Build (Alternatives A/C and D) scenarios. Intersection lane configurations were provided by Sain Associates, Inc. for several of the intersections. For the remaining existing intersections, data was compiled from aerial photography mapping and the TRIMS Blount County Database. For the existing signalized intersections, signal timings were provided by the City of Maryville Public Works Department. Optimized signal timings were assumed for intersections with a new traffic signal. **Tables 15 through 25** show the intersection levels of service for each scenario.

Table 15: 2006 / 2008 Existing Intersection Levels of Service

Intersection	Type	Approach	AM	LOS	PM	LOS
			Avg. Delay (sec)		Avg. Delay (sec)	
3: SR 115 / US 129 @ SR 73 / US 321	Signalized	Eastbound	59.3	E	227.1	F
		Westbound	42.9	D	56.0	E
		Northbound	836.2	F	119.6	F
		Southbound	33.0	C	174.0	F
		Whole Int.	388.5	F	141.6	F
5: SR 33 @ I-140	STOP Controlled	Eastbound	1531.0	F	851.7	F
		Northbound	30.5	D	11.3	B
		Southbound	-	-	-	-
6: SR 33 @ Wildwood Road	Signalized	Westbound	60.7	E	52.1	D
		Northbound	54.4	D	131.2	F
		Southbound	50.3	D	84.9	F
		Whole Int.	54.5	D	100.6	F
7: SR 33 / E. Broadway Avenue @ SR 35 / S. Washington Street	Signalized	Eastbound	38.7	D	50.1	D
		Westbound	52.7	D	70.5	E
		Northbound	38.3	D	36.9	D
		Southbound	26.1	C	49.1	D
		Whole Int.	36.9	D	48.1	D
8: SR 33 @ SR 73 / US 321	Signalized	Eastbound	51.2	D	650.2	F
		Westbound	22.7	C	39.4	D
		Northbound	642.8	F	156.8	F
		Southbound	35.6	D	104.4	F
		Whole Int.	228.6	F	270.8	F
9: SR 35 / S. Washington Street @ Sevierville Road	Signalized	Eastbound	27.7	C	39.2	D
		Westbound	37.2	D	48.2	D
		Northbound	14.9	B	12.3	B
		Southbound	14.3	B	14.2	B
		Whole Int.	17.1	B	17.1	B
10: S. Washington Street / SR 35 @ High Street / SR 35	Signalized	Eastbound	35.6	D	38.1	D
		Westbound	98.6	F	68.8	E
		Northbound	18.0	B	36.0	D
		Southbound	7.2	A	19.2	B
		Whole Int.	26.3	C	31.2	C
11: S. Washington Street @ SR 73 / US 321	Signalized	Eastbound	45.2	D	170.9	F
		Westbound	30.0	C	41.9	D
		Northbound	22.7	C	28.7	C
		Southbound	45.8	D	136.8	F
		Whole Int.	34.5	C	95.2	F
12: SR 73 / US 321 @ SR 335 / Old Glory Road	Signalized	Eastbound	241.0	F	168.4	F
		Westbound	181.6	F	171.4	F
		Northbound	26.7	C	25.1	C
		Southbound	28.2	C	30.4	C
		Whole Int.	153.3	F	120.9	F

Table 15: 2006 / 2008 Existing Intersection Levels of Service (cont.)

Intersection	Type	Approach	AM	LOS	PM	LOS
			Avg. Delay (sec)		Avg. Delay (sec)	
13: SR 33 @ Sam Houston School Road	Signalized	Westbound	17.5	B	11.6	B
		Northbound	19.1	B	21.2	C
		Southbound	23.1	C	26.9	C
		Whole Int.	19.5	B	22.3	C
14: Sam Houston School Road @ Wildwood Road	STOP Controlled	Eastbound	9.0	A	7.7	A
		Westbound	-	-	-	-
		Southbound	12.9	B	12.3	B
15: Peppermint Road @ Wildwood Road	STOP Controlled	Eastbound	-	-	-	-
		Westbound	7.8	A	8.2	A
		Northbound	11.1	B	12.3	B
16: SR 35 / US 411 / Sevierville Road @ Peppermint Road	STOP Controlled	Eastbound	9.0	A	8.1	A
		Westbound	-	-	-	-
		Southbound	21.5	C	22.2	C
17: SR 35 / US 411 / Sevierville Road @ Hitch Road / Peppermint Hills Drive	STOP Controlled	Eastbound	8.3	A	7.8	A
		Westbound	7.9	A	8.5	A
		Northbound	20.2	C	17.1	C
		Southbound	11.4	B	12.4	B
18: Davis Ford Road @ Hitch Road	STOP Controlled	Eastbound	7.5	A	7.4	A
		Westbound	-	-	-	-
		Southbound	10.1	B	9.6	A
19: Davis Ford Road @ Helton Road	STOP Controlled	Eastbound	-	-	-	-
		Westbound	7.3	A	7.3	A
		Northbound	8.7	A	8.6	A
20: SR 73 / US 321 @ Helton Road / Tuckaleechee Pike	STOP Controlled	Eastbound	11.3	B	9.2	A
		Westbound	9.6	A	10.7	B
		Northbound	16.5	C	17.4	C
		Southbound	89.9	F	32.7	D

Table 16: 2015 No-Build Intersection Levels of Service

Intersection	Type	Approach	AM	LOS	PM	LOS
			Avg. Delay (sec)		Avg. Delay (sec)	
3: SR 115 / US 129 @ SR 73 / US 321	Signalized	Eastbound	298.4	F	649.2	F
		Westbound	69.0	E	211.2	F
		Northbound	1425.0	F	484.1	F
		Southbound	35.1	D	536.0	F
		Whole Int.	703.2	F	460.0	F
5: SR 33 @ I-140	Signalized	Eastbound	751.8	F	1460.0	F
		Northbound	2725.0	F	2504.0	F
		Southbound	3418.0	F	3344.0	F
		Whole Int.	2227.0	F	2224.0	F
6: SR 33 @ Wildwood Road	Signalized	Westbound	70.6	E	53.8	D
		Northbound	71.4	E	382.7	F
		Southbound	58.8	E	261.2	F
		Whole Int.	66.7	E	284.9	F
7: SR 33 / E. Broadway Avenue @ SR 35 / S. Washington Street	Signalized	Eastbound	46.5	D	63.9	E
		Westbound	88.6	F	128.9	F
		Northbound	60.7	E	47.0	D
		Southbound	27.6	C	78.6	E
		Whole Int.	52.7	D	73.1	E
8: SR 33 @ SR 73 / US 321	Signalized	Eastbound	268.9	F	1165.0	F
		Westbound	37.8	D	287.9	F
		Northbound	1451.0	F	608.4	F
		Southbound	39.0	D	314.5	F
		Whole Int.	571.5	F	631.4	F
9: SR 35 / S. Washington Street @ Sevierville Road	Signalized	Eastbound	27.8	C	39.7	D
		Westbound	38.8	D	50.1	D
		Northbound	15.8	B	13.1	B
		Southbound	15.0	B	15.6	B
		Whole Int.	17.9	B	18.3	B
10: S. Washington Street / SR 35 @ High Street / SR 35	Signalized	Eastbound	37.1	D	40.1	D
		Westbound	244.9	F	149.8	F
		Northbound	18.5	B	40.5	D
		Southbound	7.5	A	28.0	C
		Whole Int.	47.2	D	45.3	D
11: S. Washington Street @ SR 73 / US 321	Signalized	Eastbound	287.0	F	531.3	F
		Westbound	31.3	C	55.4	E
		Northbound	222.3	F	370.6	F
		Southbound	204.2	F	585.2	F
		Whole Int.	235.1	F	459.4	F
12: SR 73 / US 321 @ SR 335 / Old Glory Road	Signalized	Eastbound	484.1	F	226.9	F
		Westbound	239.2	F	380.1	F
		Northbound	27.9	C	25.8	C
		Southbound	29.2	C	33.0	C
		Whole Int.	271.8	F	220.4	F

Table 16: 2015 No-Build Intersection Levels of Service (cont.)

Intersection	Type	Approach	AM	LOS	PM	LOS
			Avg. Delay (sec)		Avg. Delay (sec)	
13: SR 33 @ Sam Houston School Road	Signalized	Westbound	37.9	D	21.4	C
		Northbound	42.9	D	22.1	C
		Southbound	19.3	B	33.2	C
		Whole Int.	36.2	D	26.7	C
14: Sam Houston School Road @ Wildwood Road	STOP Controlled	Eastbound	9.4	A	7.7	A
		Westbound	-	-	-	-
		Southbound	13.8	B	13.2	B
15: Peppermint Road @ Wildwood Road	STOP Controlled	Eastbound	-	-	-	-
		Westbound	7.8	A	8.3	A
		Northbound	11.5	B	13.1	B
16: SR 35 / US 411 / Sevierville Road @ Peppermint Road	STOP Controlled	Eastbound	9.3	A	8.2	A
		Westbound	-	-	-	-
		Southbound	26.7	D	28.8	D
17: SR 35 / US 411 / Sevierville Road @ Hitch Road / Peppermint Hills Drive	STOP Controlled	Eastbound	8.4	A	7.9	A
		Westbound	7.9	A	8.7	A
		Northbound	24.2	C	19.2	C
		Southbound	12.1	B	12.5	B
18: Davis Ford Road @ Hitch Road	STOP Controlled	Eastbound	7.5	A	7.4	A
		Westbound	-	-	-	-
		Southbound	10.3	B	9.7	A
19: Davis Ford Road @ Helton Road	STOP Controlled	Eastbound	-	-	-	-
		Westbound	7.4	A	7.3	A
		Northbound	8.7	A	8.6	A
20: SR 73 / US 321 @ Helton Road / Tuckaleechee Pike	STOP Controlled	Eastbound	11.9	B	9.4	A
		Westbound	9.9	A	11.3	B
		Northbound	20.6	C	19.5	C
		Southbound	142.8	F	44.6	E

Table 17: 2035 No-Build Intersection Levels of Service

Intersection	Type	Approach	AM	LOS	PM	LOS
			Avg. Delay (sec)		Avg. Delay (sec)	
3: SR 115 / US 129 @ SR 73 / US 321	Signalized	Eastbound	798.1	F	1275.0	F
		Westbound	400.1	F	715.5	F
		Northbound	2266.0	F	1054.0	F
		Southbound	40.9	D	1068.0	F
		Whole Int.	1245.0	F	1014.0	F
5: SR 33 @ I-140	Signalized	Eastbound	2834.0	F	3362.0	F
		Northbound	6540.0	F	5813.0	F
		Southbound	6419.0	F	7328.0	F
		Whole Int.	5384.0	F	5103.0	F
6: SR 33 @ Wildwood Road	Signalized	Westbound	997.2	F	123.0	F
		Northbound	1244.0	F	2111.0	F
		Southbound	990.3	F	1878.0	F
		Whole Int.	1091.0	F	1729.0	F
7: SR 33 / E. Broadway Avenue @ SR 35 / S. Washington Street	Signalized	Eastbound	56.1	E	86.8	F
		Westbound	145.7	F	203.2	F
		Northbound	126.6	F	75.4	E
		Southbound	28.9	C	135.9	F
		Whole Int.	88.2	F	118.7	F
8: SR 33 @ SR 73 / US 321	Signalized	Eastbound	1061.0	F	2047.0	F
		Westbound	167.3	F	644.1	F
		Northbound	2311.0	F	1024.0	F
		Southbound	57.6	E	840.2	F
		Whole Int.	1125.0	F	1189.0	F
9: SR 35 / S. Washington Street @ Sevierville Road	Signalized	Eastbound	27.9	C	39.9	D
		Westbound	40.2	D	52.0	D
		Northbound	16.5	B	13.8	B
		Southbound	15.5	B	16.9	B
		Whole Int.	18.6	B	19.3	B
10: S. Washington Street / SR 35 @ High Street / SR 35	Signalized	Eastbound	38.6	D	42.5	D
		Westbound	912.2	F	782.5	F
		Northbound	21.4	C	361.8	F
		Southbound	8.9	A	38.3	D
		Whole Int.	136.5	F	224.6	F
11: S. Washington Street @ SR 73 / US 321	Signalized	Eastbound	825.6	F	1713.0	F
		Westbound	113.5	F	1914.0	F
		Northbound	578.2	F	734.6	F
		Southbound	1044.0	F	1660.0	F
		Whole Int.	732.8	F	1290.0	F
12: SR 73 / US 321 @ SR 335 / Old Glory Road	Signalized	Eastbound	*	F	475.4	F
		Westbound	402.3	F	733.4	F
		Northbound	34.1	C	27.9	C
		Southbound	34.0	C	55.2	E
		Whole Int.	*	F	429.9	F

*Delay too high to calculate

Table 17: 2035 No-Build Intersection Levels of Service (cont.)

Intersection	Type	Approach	AM	LOS	PM	LOS
			Avg. Delay (sec)		Avg. Delay (sec)	
13: SR 33 @ Sam Houston School Road	Signalized	Westbound	767.1	F	482.7	F
		Northbound	662.5	F	111.7	F
		Southbound	97.5	F	317.7	F
		Whole Int.	552.1	F	223.1	F
14: Sam Houston School Road @ Wildwood Road	STOP Controlled	Eastbound	11.1	B	8.0	A
		Westbound	-	-	-	-
		Southbound	22.8	C	20.1	C
15: Peppermint Road @ Wildwood Road	STOP Controlled	Eastbound	-	-	-	-
		Westbound	8.1	A	8.9	A
		Northbound	14.3	B	18.6	C
16: SR 35 / US 411 / Sevierville Road @ Peppermint Road	STOP Controlled	Eastbound	10.5	B	8.6	A
		Westbound	-	-	-	-
		Southbound	137.0	F	179.0	F
17: SR 35 / US 411 / Sevierville Road @ Hitch Road / Peppermint Hills Drive	STOP Controlled	Eastbound	8.9	A	8.2	A
		Westbound	8.2	A	9.4	A
		Northbound	82.9	F	32.6	D
		Southbound	13.4	B	17.0	C
18: Davis Ford Road @ Hitch Road	STOP Controlled	Eastbound	7.5	A	7.5	A
		Westbound	-	-	-	-
		Southbound	11.3	B	10.3	B
19: Davis Ford Road @ Helton Road	STOP Controlled	Eastbound	-	-	-	-
		Westbound	7.4	A	7.4	A
		Northbound	8.9	A	8.7	A
20: SR 73 / US 321 @ Helton Road / Tuckaleechee Pike	STOP Controlled	Eastbound	15.3	C	10.6	B
		Westbound	11.8	B	14.9	B
		Northbound	143.1	F	52.2	F
		Southbound	1985.0	F	97.0	F

Table 18: 2015 Build (Alternatives A/C) Intersection Levels of Service

Intersection	Type	Approach	AM	LOS	PM	LOS
			Avg. Delay (sec)		Avg. Delay (sec)	
3: SR 115 / US 129 @ SR 73 / US 321	Signalized	Eastbound	243.8	F	580.1	F
		Westbound	56.8	E	152.2	F
		Northbound	1329.0	F	420.3	F
		Southbound	34.4	C	439.4	F
		Whole Int.	647.0	F	387.1	F
6: SR 33 @ Wildwood Road	Signalized	Westbound	59.9	E	51.9	D
		Northbound	53.6	D	119.6	F
		Southbound	49.9	D	80.4	F
		Whole Int.	53.9	D	93.6	F
7: SR 33 / E. Broadway Avenue @ SR 35 / S. Washington Street	Signalized	Eastbound	34.7	C	42.6	D
		Westbound	39.7	D	49.5	D
		Northbound	31.4	C	31.9	C
		Southbound	24.7	C	31.6	C
		Whole Int.	31.2	C	35.6	D
8: SR 33 @ SR 73 / US 321	Signalized	Eastbound	175.7	F	1004.0	F
		Westbound	34.3	C	266.2	F
		Northbound	1421.0	F	596.3	F
		Southbound	37.8	D	255.8	F
		Whole Int.	536.0	F	562.4	F
9: SR 35 / S. Washington Street @ Sevierville Road	Signalized	Eastbound	27.5	C	38.9	D
		Westbound	36.0	D	46.7	D
		Northbound	14.1	B	11.6	B
		Southbound	13.7	B	12.8	B
		Whole Int.	16.4	B	16.0	B
10: S. Washington Street / SR 35 @ High Street / SR 35	Signalized	Eastbound	36.5	D	39.3	D
		Westbound	172.1	F	105.1	F
		Northbound	18.3	B	38.5	D
		Southbound	7.4	A	24.0	C
		Whole Int.	36.7	D	38.1	D
11: S. Washington Street @ SR 73 / US 321	Signalized	Eastbound	321.3	F	594.7	F
		Westbound	32.0	C	72.0	E
		Northbound	185.2	F	323.6	F
		Southbound	303.6	F	730.2	F
		Whole Int.	247.3	F	494.3	F
12: SR 73 / US 321 @ SR 335 / Old Glory Road	Signalized	Eastbound	457.7	F	221.5	F
		Westbound	232.1	F	366.6	F
		Northbound	27.8	C	25.7	C
		Southbound	29.1	C	32.7	C
		Whole Int.	258.8	F	213.5	F

Table 19: 2015 Build (Alternatives A/C) New SR 33 at I-140 Intersection Levels of Service

Intersection	Type / Scenario	Approach	AM	LOS	PM	LOS
			Avg. Delay (sec)		Avg. Delay (sec)	
SR 33 @ I-140 North of Pellissippi Pkwy	Signalized; Dual Turn Lanes for Each Direction and Dual NB/SB Through Lanes	Westbound	51.5	D	29.1	C
		Northbound	23.3	C	15.1	B
		Southbound	53.4	D	19.5	B
		Whole Int.	34.2	C	17.7	B
SR 33 @ I-140 South of Pellissippi Pkwy	Signalized; Dual SB Lefts, Single EB Left, Triple EB Rights, and Dual NB/SB Through Lanes	Eastbound	61.7	E	63.2	E
		Northbound	65.4	E	74.4	E
		Southbound	14.1	B	28.4	C
		Whole Int.	53.4	D	59.2	E*

*The intersection level of service could be improved to an acceptable level if the eastbound right turns were allowed to operate in a free-flow manner and thereby not controlled by the signal.

Table 20: 2015 Build (Alternatives A/C) New US 411 at I-140 Intersection Levels of Service

Intersection	Type / Scenario	Approach	AM	LOS	PM	LOS
			Avg. Delay (sec)		Avg. Delay (sec)	
US 411 @ I-140 West of Pellissippi Pkwy	Signalized; Exclusive WB Left Turn Lane and SB Left and Right Turn Lane	Eastbound	34.9	C	47.6	D
		Westbound	17.1	B	27.5	C
		Southbound	20.9	C	21.4	C
		Whole Int.	27.6	C	30.6	C
US 411 @ I-140 East of Pellissippi Pkwy	Signalized; Exclusive EB Left Turn Lane Only	Eastbound	30.9	C	19.3	B
		Westbound	10.8	B	10.9	B
		Northbound	28.0	C	27.2	C
		Whole Int.	27.4	C	19.4	B

Table 21: 2035 Build (Alternatives A/C) Intersection Levels of Service

Intersection	Type	Approach	AM	LOS	PM	LOS
			Avg. Delay (sec)		Avg. Delay (sec)	
3: SR 115 / US 129 @ SR 73 / US 321	Signalized	Eastbound	782.0	F	1257.0	F
		Westbound	369.3	F	679.4	F
		Northbound	2242.0	F	1038.0	F
		Southbound	39.8	D	1006.0	F
		Whole Int.	1225.0	F	978.7	F
6: SR 33 @ Wildwood Road	Signalized	Westbound	346.5	F	62.4	E
		Northbound	536.6	F	1192.0	F
		Southbound	349.1	F	1015.0	F
		Whole Int.	421.5	F	955.9	F
7: SR 33 / E. Broadway Avenue @ SR 35 / S. Washington Street	Signalized	Eastbound	39.7	D	51.8	D
		Westbound	56.6	E	76.1	E
		Northbound	39.1	D	37.4	D
		Southbound	26.2	C	52.1	D
		Whole Int.	38.0	D	50.5	D
8: SR 33 @ SR 73 / US 321	Signalized	Eastbound	867.0	F	1998.0	F
		Westbound	360.7	F	642.7	F
		Northbound	2357.0	F	1056.0	F
		Southbound	57.1	E	832.4	F
		Whole Int.	1144.0	F	1178.0	F
9: SR 35 / S. Washington Street @ Sevierville Road	Signalized	Eastbound	27.6	C	39.3	D
		Westbound	37.4	D	48.4	D
		Northbound	15.0	B	12.4	B
		Southbound	14.4	B	14.3	B
		Whole Int.	17.2	B	17.2	B
10: S. Washington Street / SR 35 @ High Street / SR 35	Signalized	Eastbound	35.9	D	38.7	D
		Westbound	414.0	F	323.6	F
		Northbound	19.9	B	111.5	F
		Southbound	8.0	A	22.2	C
		Whole Int.	68.5	E	84.0	F
11: S. Washington Street @ SR 73 / US 321	Signalized	Eastbound	688.8	F	1383.0	F
		Westbound	49.7	D	1164.0	F
		Northbound	618.6	F	789.9	F
		Southbound	829.7	F	1379.0	F
		Whole Int.	664.6	F	1123.0	F
12: SR 73 / US 321 @ SR 335 / Old Glory Road	Signalized	Eastbound	*	F	489.8	F
		Westbound	411.2	F	751.2	F
		Northbound	34.6	C	28.1	C
		Southbound	34.3	C	57.2	E
		Whole Int.	*	F	441.1	F

*Delay too high to calculate

Table 22: 2035 Build (Alternatives A/C) New SR 33 at I-140 Intersection Levels of Service

Intersection	Type / Scenario	Approach	AM	LOS	PM	LOS
			Avg. Delay (sec)		Avg. Delay (sec)	
SR 33 @ I-140 North of Pellissippi Pkwy	Signalized; Dual Turn Lanes for Each Direction and Dual NB/SB Through Lanes	Westbound	274.4	F	166.0	F
		Northbound	181.4	F	197.5	F
		Southbound	250.0	F	119.1	F
		Whole Int.	215.4	F	172.9	F
SR 33 @ I-140 South of Pellissippi Pkwy	Signalized; Dual SB Lefts, Single EB Left, Triple EB Rights, and Dual NB/SB Through Lanes	Eastbound	329.0	F	302.9	F
		Northbound	364.3	F	421.2	F
		Southbound	18.3	B	39.1	D
		Whole Int.	269.9	F	279.0	F

Table 23: 2035 Build (Alternatives A/C) New US 411 at I-140 Intersection Levels of Service

Intersection	Type / Scenario	Approach	AM	LOS	PM	LOS
			Avg. Delay (sec)		Avg. Delay (sec)	
US 411 @ I-140 West of Pellissippi Pkwy	Signalized; Exclusive WB Left Turn Lane and SB Left and Right Turn Lane	Eastbound	34.5	C	50.5	D
		Westbound	19.0	B	24.9	C
		Southbound	20.9	C	27.4	C
		Whole Int.	26.6	C	34.5	C
US 411 @ I-140 East of Pellissippi Pkwy	Signalized; Exclusive EB Left Turn Lane Only	Eastbound	38.2	D	19.8	B
		Westbound	10.1	B	10.7	B
		Northbound	37.6	D	29.5	C
		Whole Int.	34.0	C	20.6	C

Table 24: 2015 Build (Alternative D) Intersection Levels of Service

Intersection	Type	Approach	AM	LOS	PM	LOS
			Avg. Delay (sec)		Avg. Delay (sec)	
3: SR 115 / US 129 @ SR 73 / US 321	Signalized	Eastbound	261.8	F	649.3	F
		Westbound	59.0	E	1173.0	F
		Northbound	1361.0	F	78.4	E
		Southbound	34.5	C	296.2	F
		Whole Int.	665.2	F	575.8	F
5: SR 33 @ I-140	Signalized	Eastbound	1763.0	F	2841.0	F
		Northbound	2636.0	F	1977.0	F
		Southbound	3697.0	F	4064.0	F
		Whole Int.	2528.0	F	2757.0	F
6: SR 33 @ Wildwood Road	Signalized	Westbound	67.4	E	53.3	D
		Northbound	66.4	E	328.5	F
		Southbound	56.6	E	217.4	F
		Whole Int.	63.2	E	242.7	F
7: SR 33 / E. Broadway Avenue @ SR 35 / S. Washington Street	Signalized	Eastbound	56.1	D	67.1	E
		Westbound	131.9	F	180.2	F
		Northbound	176.1	F	301.0	F
		Southbound	28.5	C	251.0	F
		Whole Int.	103.1	F	234.3	F
8: SR 33 @ SR 73 / US 321	Signalized	Eastbound	203.2	F	669.0	F
		Westbound	118.9	F	657.2	F
		Northbound	2079.0	F	1342.0	F
		Southbound	37.0	D	463.6	F
		Whole Int.	814.6	F	790.0	F
9: SR 35 / S. Washington Street @ Sevierville Road	Signalized	Eastbound	27.8	C	28.2	C
		Westbound	38.4	D	36.0	D
		Northbound	15.5	B	16.7	B
		Southbound	14.7	B	20.4	C
		Whole Int.	17.6	B	20.4	C
10: S. Washington Street / SR 35 @ High Street / SR 35	Signalized	Eastbound	46.6	D	265.0	F
		Westbound	952.4	F	1806.0	F
		Northbound	20.3	C	29.4	C
		Southbound	9.0	A	226.3	F
		Whole Int.	148.0	F	323.0	F
11: S. Washington Street @ SR 73 / US 321	Signalized	Eastbound	597.1	F	626.2	F
		Westbound	44.1	D	62.4	E
		Northbound	261.2	F	312.6	F
		Southbound	826.3	F	2625.0	F
		Whole Int.	470.9	F	1014.0	F
12: SR 73 / US 321 @ SR 335 / Old Glory Road	Signalized	Eastbound	808.0	F	301.9	F
		Westbound	286.8	F	493.7	F
		Northbound	29.6	C	26.4	C
		Southbound	30.4	C	38.1	D
		Whole Int.	421.9	F	285.7	F

Table 24: 2015 Build (Alternative D) Intersection Levels of Service (cont.)

Intersection	Type	Approach	AM	LOS	PM	LOS
			Avg. Delay (sec)		Avg. Delay (sec)	
13: SR 33 @ Sam Houston School Road	Signalized	Westbound	341.0	F	110.8	F
		Northbound	121.1	F	351.2	F
		Southbound	18.8	B	20.2	B
		Whole Int.	188.3	F	197.2	F
New (15/16): Wildwood Road @ Peppermint Road / Sam Houston School Road	STOP Controlled	Eastbound	8.3	A	8.0	A
		Westbound	10.3	B	9.1	A
		Northbound	4064.0	F	1487.0	F
		Southbound	5697.0	F	1980.0	F
New (16/17): SR 35 / US 411 / Sevierville Road @ Peppermint Road / Hitch Road	STOP Controlled	Eastbound	12.8	B	11.3	B
		Westbound	8.5	A	8.3	A
		Northbound	26527.0	F	11142.0	F
		Southbound	22757.0	F	9846.0	F
New (18/19): Davis Ford Road @ Hitch Road / Helton Road	STOP Controlled	Eastbound	7.7	A	7.6	A
		Westbound	7.8	A	7.7	A
		Northbound	545.6	F	289.5	F
		Southbound	353.6	F	155.5	F
20: SR 73 / US 321 @ Helton Road / Tuckaleechee Pike	STOP Controlled	Eastbound	160.0	F	38.6	E
		Westbound	12.9	B	11.3	B
		Northbound	*	F	42941.0	F
		Southbound	*	F	24882.0	F

*Delay too high to calculate

Table 25: 2035 Build (Alternative D) Intersection Levels of Service

Intersection	Type	Approach	AM	LOS	PM	LOS
			Avg. Delay (sec)		Avg. Delay (sec)	
3: SR 115 / US 129 @ SR 73 / US 321	Signalized	Eastbound	703.9	F	1208.0	F
		Westbound	308.2	F	1888.0	F
		Northbound	2114.0	F	441.3	F
		Southbound	38.8	D	784.5	F
		Whole Int.	1140.0	F	1117.0	F
5: SR 33 @ I-140	Signalized	Eastbound	4193.0	F	5664.0	F
		Northbound	6837.0	F	4089.0	F
		Southbound	7499.0	F	9877.0	F
		Whole Int.	6051.0	F	6054.0	F
6: SR 33 @ Wildwood Road	Signalized	Westbound	910.7	F	104.6	F
		Northbound	1176.0	F	2026.0	F
		Southbound	928.2	F	1794.0	F
		Whole Int.	1020.0	F	1653.0	F
7: SR 33 / E. Broadway Avenue @ SR 35 / S. Washington Street	Signalized	Eastbound	93.5	F	151.9	F
		Westbound	272.7	F	180.5	F
		Northbound	400.7	F	301.0	F
		Southbound	31.9	C	251.0	F
		Whole Int.	215.8	F	243.7	F
8: SR 33 @ SR 73 / US 321	Signalized	Eastbound	817.9	F	1352.0	F
		Westbound	232.3	F	864.0	F
		Northbound	2611.0	F	1696.0	F
		Southbound	43.5	D	951.6	F
		Whole Int.	1192.0	F	1211.0	F
9: SR 35 / S. Washington Street @ Sevierville Road	Signalized	Eastbound	27.9	C	28.5	C
		Westbound	41.1	D	37.1	D
		Northbound	16.6	B	18.3	B
		Southbound	15.6	B	25.1	C
		Whole Int.	18.7	B	23.4	C
10: S. Washington Street / SR 35 @ High Street / SR 35	Signalized	Eastbound	41.4	D	115.7	F
		Westbound	1215.0	F	2238.0	F
		Northbound	22.5	C	84.7	F
		Southbound	10.2	B	162.2	F
		Whole Int.	178.3	F	332.7	F
11: S. Washington Street @ SR 73 / US 321	Signalized	Eastbound	826.8	F	958.1	F
		Westbound	167.0	F	379.5	F
		Northbound	522.9	F	572.8	F
		Southbound	1124.0	F	3122.0	F
		Whole Int.	726.7	F	1343.0	F
12: SR 73 / US 321 @ SR 335 / Old Glory Road	Signalized	Eastbound	*	F	560.9	F
		Westbound	460.4	F	824.8	F
		Northbound	40.6	D	29.0	C
		Southbound	37.0	D	83.6	F
		Whole Int.	*	F	490.9	F

*Delay too high to calculate

Table 25: 2035 Build (Alternative D) Intersection Levels of Service (cont.)

Intersection	Type	Approach	AM	LOS	PM	LOS
			Avg. Delay (sec)		Avg. Delay (sec)	
13: SR 33 @ Sam Houston School Road	Signalized	Westbound	1075.0	F	454.6	F
		Northbound	2119.0	F	770.2	F
		Southbound	457.4	F	1419.0	F
		Whole Int.	1397.0	F	850.0	F
New (14/15): Wildwood Road @ Peppermint Road / Sam Houston School Road	STOP Controlled	Eastbound	8.4	A	8.0	A
		Westbound	13.4	B	10.6	B
		Northbound	11076.0	F	3386.0	F
		Southbound	17387.0	F	4760.0	F
New (16/17): SR 35 / US 411 / Sevierville Road @ Peppermint Road / Hitch Road	STOP Controlled	Eastbound	15.3	C	12.7	B
		Westbound	9.0	A	8.7	A
		Northbound	*	F	42370.0	F
		Southbound	*	F	32909.0	F
New (18/19): Davis Ford Road @ Hitch Road / Helton Road	STOP Controlled	Eastbound	7.9	A	7.7	A
		Westbound	8.6	A	8.3	A
		Northbound	3042.0	F	1746.0	F
		Southbound	3451.0	F	1969.0	F
20: SR 73 / US 321 @ Helton Road / Tuckaleechee Pike	STOP Controlled	Eastbound	2558.0	F	1180.0	F
		Westbound	27.3	D	17.8	C
		Northbound	*	F	*	F
		Southbound	*	F	*	F

*Delay too high to calculate

Table 26 provides a summary of the intersection level of service.

Many of the intersections currently operate at a poor LOS (LOS E or F) with some additional intersections having failing operations by the year 2035 (Washington Street at High Street and SR 33 at Sam Houston School Road) in the No-Build scenario. The stop controlled intersections evaluated along Sam Houston School Road, Peppermint Road, Hitch Road, and Helton Road generally operate at an acceptable LOS in the No-Build scenario with some poor operations beginning in the year 2035 for some approaches.

Based on this analysis, there are no intersections where the construction of the Pellissippi Parkway Extension (Build Alternative A/C) would degrade the level of service. There are a few intersections where the proposed project would improve the level of service. The locations include:

- Improvement at the intersection of SR 33 at Wildwood Road for the year 2015 during the AM peak period – the LOS is improved to a LOS D from a LOS E, which is at the threshold for acceptable operations.
- Improvements for SR 33 / E. Broadway Avenue at SR 35 / S. Washington Street intersection for 2015 and 2035 for both peak periods.

There is an improvement for the year 2015 at the intersection of SR 33 and I-140 (Pellissippi Parkway); however, this improvement is a result of improvements at the new ramp intersections including signaling both intersections and adding turn lanes and dual northbound/southbound through lanes. Additional improvements were evaluated for the 2035 Build scenario; however, it was not possible to achieve an acceptable LOS (i.e. LOS D) for this intersection.

For all the re-aligned intersections as part of Alternative D, the LOS for both 2015 and 2035 is poor given the high traffic volumes projected to use the intersections. As this project is in the planning phase, no specific design plans have been developed for these intersections and they were evaluated as stop controlled intersections as well as signalized to determine the best possible operations and to determine if it was possible to achieve an acceptable LOS. Providing turn lanes where appropriate and signaling the intersections still resulted in a poor LOS. The through volumes are high enough to cause the intersections to operate at capacity and result in long delays. To reduce delay through the intersection, additional capacity would be required in the form of additional through lanes. Leaving the intersections unsignalized allows for acceptable operations on the major street (i.e. Wildwood Road, US 411, Davis Ford Road, and US 321) but causes significant delay on the side streets (i.e. Peppermint Road, Hitch Road, Helton Road, and Tuckaleechee Pike). Therefore, the results were presented for the stop controlled scenario since it was possible to achieve some acceptable levels of service. If Alternative D is selected as the preferred alternative, additional analysis may be required to determine the appropriate intersection configuration and traffic control for the newly re-aligned intersections.

Level of service results are not presented for Build Alternative A/C for the eastern intersections located along Build Alternative D (i.e. along Sam Houston School Road, Peppermint Road, Hitch Road, and Helton Road). It was assumed that the traffic operations would be similar to the No-Build Alternative or possibly better if traffic volumes are reduced on the local roads with the extension in place.

Table 26: Existing Intersection Levels of Service Summary

Intersection	AM							PM						
	Existing	2015 No-Build	2035 No-Build	2015 Build Alternative A/C	2035 Build Alternative A/C	2015 Build Alternative D	2035 Build Alternative D	Existing	2015 No-Build	2035 No-Build	2015 Build Alternative A/C	2035 Build Alternative A/C	2015 Build Alternative D	2035 Build Alternative D
SR 115 / US 129 @ SR 73 / US 321	F	F	F	F	F	F	F	F	F	F	F	F	F	F
SR 33 @ I-140	F	F	F	D	F	F	F	F	F	F	E	F	F	F
SR 33 @ Wildwood Rd	D	E	F	D	F	E	F	F	F	F	F	F	F	F
SR 33 / E. Broadway Ave @ SR 35 / S. Washington St	D	D	F	C	D	F	F	D	E	F	D	D	F	F
SR 33 @ SR 73 / US 321	F	F	F	F	F	F	F	F	F	F	F	F	F	F
SR 35 / S. Washington St @ Sevierville Rd	B	B	B	B	B	B	B	B	B	B	B	B	C	C
S. Washington St / SR 35 @ High St / SR 35	C	D	F	D	E	F	F	C	D	F	D	F	F	F
S. Washington St @ SR 73 / US 321	C	F	F	F	F	F	F	F	F	F	F	F	F	F
SR 73 / US 321 @ SR 335 / Old Glory Rd	F	F	F	F	F	F	F	F	F	F	F	F	F	F
SR 33 @ Sam Houston School Road	B	D	F	Not Provided	Not Provided	F	F	C	C	F	Not Provided	Not Provided	F	F
Sam Houston School Road @ Wildwood Road	B	B	C	Not Provided	Not Provided	Realigned	Realigned	B	B	C	Not Provided	Not Provided	Realigned	Realigned
Peppermint Road @ Wildwood Road	B	B	B	Not Provided	Not Provided	Realigned	Realigned	B	B	C	Not Provided	Not Provided	Realigned	Realigned
SR 35 / US 411 / Sevierville Road @ Peppermint Road	C	D	F	Not Provided	Not Provided	Realigned	Realigned	C	D	F	Not Provided	Not Provided	Realigned	Realigned
SR 35 / US 411 / Sevierville Road @ Hitch Road / Peppermint Hills Drive	C	C	F	Not Provided	Not Provided	Realigned	Realigned	C	C	D	Not Provided	Not Provided	Realigned	Realigned
Davis Ford Road @ Hitch Road	B	B	B	Not Provided	Not Provided	Realigned	Realigned	A	A	B	Not Provided	Not Provided	Realigned	Realigned
Davis Ford Road @ Helton Road	A	A	A	Not Provided	Not Provided	Realigned	Realigned	A	A	A	Not Provided	Not Provided	Realigned	Realigned
SR 73 / US 321 @ Helton Road / Tuckaleechee Pike	F	F	F	Not Provided	Not Provided	F	F	D	E	F	Not Provided	Not Provided	F	F

The delay associated with the level of service is another measure to determine changes in traffic operations. Delay is a measure of the additional travel time experienced by a driver through an intersection. The average delay per movement is shown on the previous tables (Tables 15-25), which detail intersection level of service. To provide a summary of the impacts associated with the Build Alternative A/C and Build Alternative D, the delay for the each alternative was compared to the No-Build Alternative. Tables 27 and 28 summarize the expected change in the amount of delay (in terms of seconds of delay) at key intersections in the design year 2035 for each Build Alternative in comparison with the No-Build Alternative. Figures 12 and 13 display the percentage difference in delay between the No-Build and the Build Alternatives at those intersections in 2035.

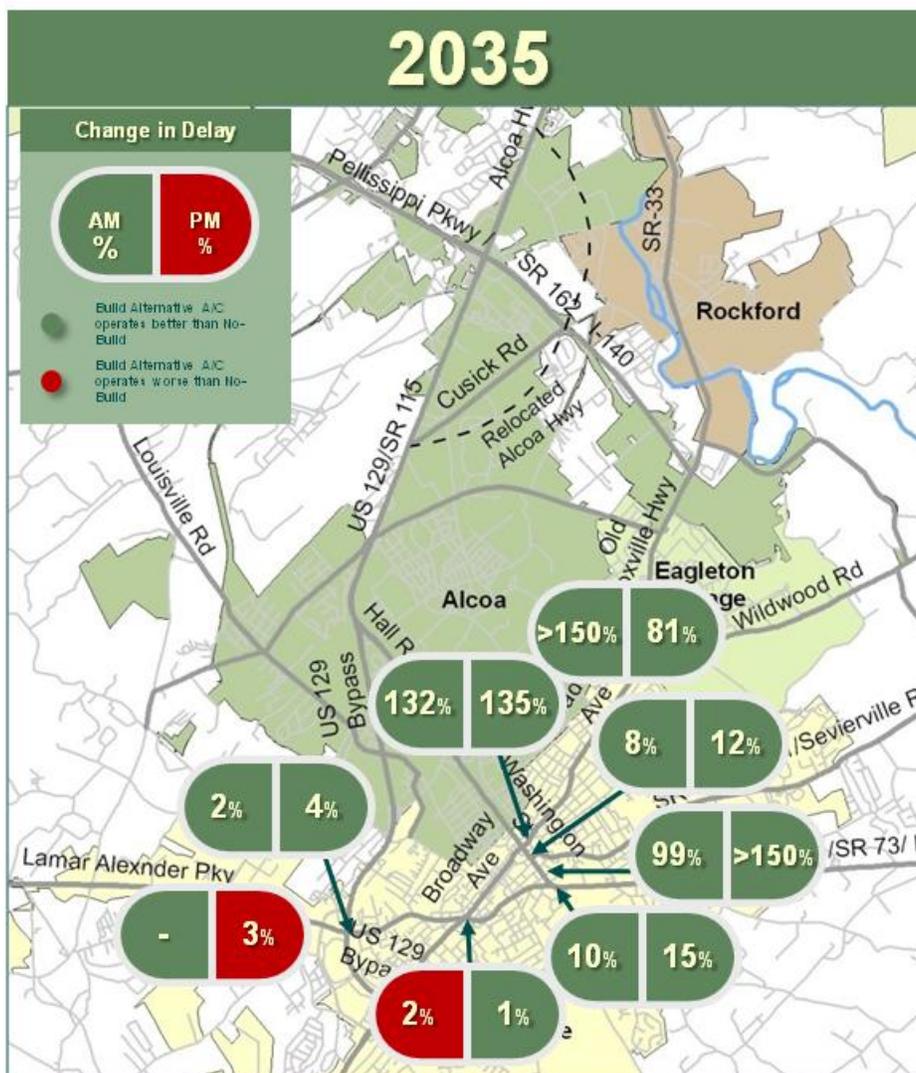
Table 27: 2035 Intersection Delay Change for Alternative A/C Compared to No-Build

Intersection	2035	
	AM Change in Delay (seconds)	PM Change in Delay (seconds)
SR 115/US 129 @ SR 73/US 321	20.0	35.3
SR 33 @ Wildwood Rd	669.5	773.1
SR 33/E Broadway Ave @ SR 35/S. Washington St	50.2	68.2
SR 33 @ SR 73/US 321	19.0	11.0
SR 35/S. Washington St @ Sevierville Rd	1.4	2.1
S. Washington St/SR 35 @ High St/SR 35	68.0	140.6
S. Washington St. @ SR 73.US 321	68.2	167.0
SR 73/US 321 @ SR 335/Old Glory Rd	-	11.2
<div style="display: flex; justify-content: space-between; align-items: center;"> <div style="width: 20px; height: 10px; background-color: #90EE90; border: 1px solid black;"></div> Build Alternatives A/C operates better than No-Build </div> <div style="display: flex; justify-content: space-between; align-items: center; margin-top: 5px;"> <div style="width: 20px; height: 10px; background-color: #FF0000; border: 1px solid black;"></div> Build Alternatives A/C operates worse than No-Build </div>		

Table 28: 2035 Intersection Delay Change for Alternative D Compared to No-Build

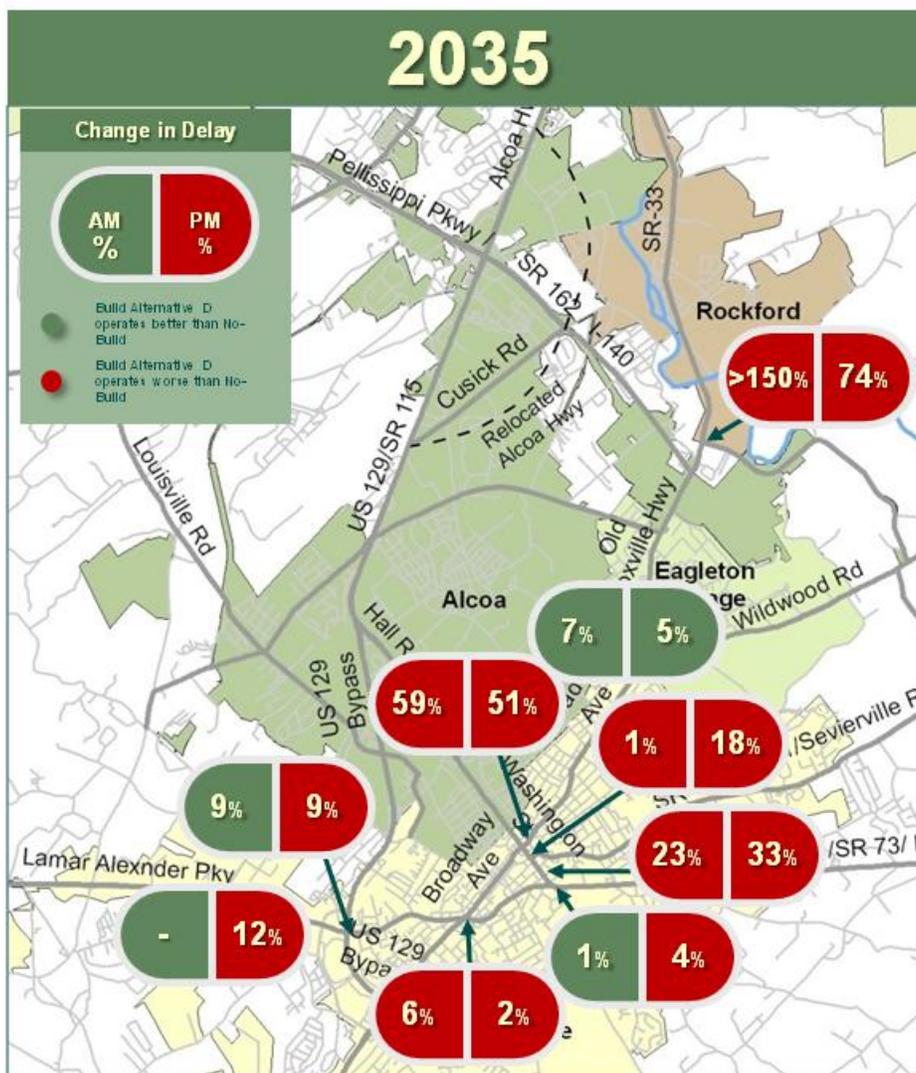
Intersection	2035	
	AM Change in Delay (seconds)	PM Change in Delay (seconds)
SR 115/US 129 @ SR 73/US 321	105.0	-103.0
SR 33 @ Wildwood Rd	71.0	76.0
SR 33/E Broadway Ave @ SR 35/S. Washington St	-127.6	-125.0
SR 33 @ SR 73/US 321	-67.0	-22.0
SR 35/S. Washington St @ Sevierville Rd	-0.1	-4.1
S. Washington St/SR 35 @ High St/SR 35	-41.8	-108.1
S. Washington St. @ SR 73.US 321	6.1	-53.0
SR 73/US 321 @ SR 335/Old Glory Rd	-	-61.0
SR 33 @ Sam Houston School Road	-844.9	-626.9
<div style="display: flex; justify-content: space-between; align-items: center;"> <div style="width: 20px; height: 10px; background-color: #90EE90; border: 1px solid black;"></div> Build Alternative D operates better than No-Build </div> <div style="display: flex; justify-content: space-between; align-items: center; margin-top: 5px;"> <div style="width: 20px; height: 10px; background-color: #FF0000; border: 1px solid black;"></div> Build Alternative D operates worse than No-Build </div>		

Figure 12: 2035 Intersection Delay Comparisons for Alternative A/C



As shown in **Table 27** and **Figure 12**, Alternative A/C shows substantial improvement in delay in most of the intersections in the Alcoa / Maryville core. The improvements range from 1% reduction in delay to over 150% reduction in delay (compared to the No-Build). In actual terms of seconds of delay, these improvements correspond to a reduction in delay of between 11 seconds and 141 seconds over the No-Build. Of the eight intersections examined, only two would operate worse under Alternative A/C compared with the No-Build Alternative, one during the morning peak and another during the afternoon peak.

Figure 13: 2035 Intersection Delay Comparisons for Alternative D



As shown in **Table 28** and **Figure 13**, under Alternative D, most of the intersections in the Maryville core experience increased delay, ranging from 2% to 59% increase in delay compared to the No-Build Alternative. This corresponds to an increase in delay (from the No-Build Alternative) of between 1 second and 128 seconds. Of the nine total intersections examined, five would experience worse delay during the morning and afternoon peak hours, and three would experience increased delays in the afternoon peak hour. The most extreme increase in delay would occur at the SR 33 at Sam Houston School Road intersection, where the increase in delay would be between 627 and 845 seconds during the peak hours (representing a 74% to over 150% increase in delay from the No-Build Alternative).

A single intersection, SR 33 at Wildwood Road, would experience a 5 to 7% improvement in delay with Alternative D compared to the No-Build Alternative in 2035.

5.0 SUMMARY OF CHANGES

Following the publications of the DEIS in 2010, TDOT conducted additional analysis of traffic operations in order to address comments received and to provide the most comparable traffic operations analysis between the alternatives. The changes that have been made to the Traffic Operations Technical Report in response to the comments include:

- Forecasted volumes for the No-Build scenario for the segment of US 129 north of US 321 were modified, due to an incorrectly reported base volume from the regional travel demand model in the original study.
- For clarification, additional forecasted volumes and truck percentage were reported for the segment of US 129 between SR 35 and Louisville Road.
- For clarification, additional forecasted volumes and truck percentage were reported for the segment of US 129 between Relocated Alcoa Highway and SR 335.
- To be comparable, more detailed traffic forecasts were provided for Alternative D and for the existing roads that comprise Alternative D.
- To display these volume changes, figures depicting forecasted traffic volumes and truck percentages for both the Build (Alternatives A/C and D) and No-Build scenarios were included in the traffic report.
- The level of service calculations were revised to take into account the changes to the traffic forecasts as stated previously.
- In addition to showing levels of service to define traffic operations changes between the Build and No-Build scenarios, the percent reduction or increase in delay was examined for both build scenarios in the year 2035.
 - Overall, the Build Alternative (A/C) shows a substantial reduction in delay compared to the No-Build at most study area intersections, with the reduction in delay ranging from 1% (corresponding to 11 seconds less than the No-Build Alternative) to over 150% (corresponding to 141 seconds less than the No-Build Alternative).
 - For most key intersections, Build Alternative D shows a moderate increase in delay, ranging from 2% (a 1-second increase over the No-Build) to 59% (a 128-second increase over the No-Build). One intersection (SR 33 at Sam Houston School Road) is predicted to experience rather extreme increases in delay by 2035 under Alternative D, ranging from 74% (a 627 second increase over the No-Build) to over 150% increase (a 845 second increase over the No-Build) during the peak hours.

SR 162 (PELLISSIPPI PARKWAY EXTENSION)

CRASH ANALYSIS REPORT UPDATE

**BLOUNT COUNTY, TENNESSEE
P.I.N. 101423.00**

Prepared for:

Tennessee Department of Transportation



Prepared by:

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February 2014

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PROJECT BACKGROUND AND STUDY AREA

This report documents a traffic safety analysis conducted for the areas impacted by the proposed State Route 162 (Pellissippi Parkway) extension. The objective of the analysis is to review crash data from the study area during a defined study period to determine historical trends in crashes and investigate the impact the proposed project may have on crashes in the study area. The analysis includes breakdowns of crashes by severity, time, location, and type, as well as discussion of the effects of the proposed project on these parameters.

The project, proposed by the Tennessee Department of Transportation (TDOT), would extend State Route 162 (Pellissippi Parkway) from its existing terminus at State Route (SR) 33 (Old Knoxville Highway) in Alcoa approximately 4.5 miles southeast to SR 73 (US 321, Lamar Alexander Parkway) east of Maryville in Blount County.

The project is currently undergoing an environmental review by TDOT and the Federal Highway Administration (FHWA); a reevaluation of the Draft Environmental Impact Statement (DEIS) is in the process of being finalized prior to the preparation of a Final EIS (FEIS) and a Record of Decision (ROD). Pursuant to the environmental review, this report provides information on the proposed project's impacts to traffic safety, and updates the original August 2007 traffic safety document, subsequently revised in May 2009 and June 2013.

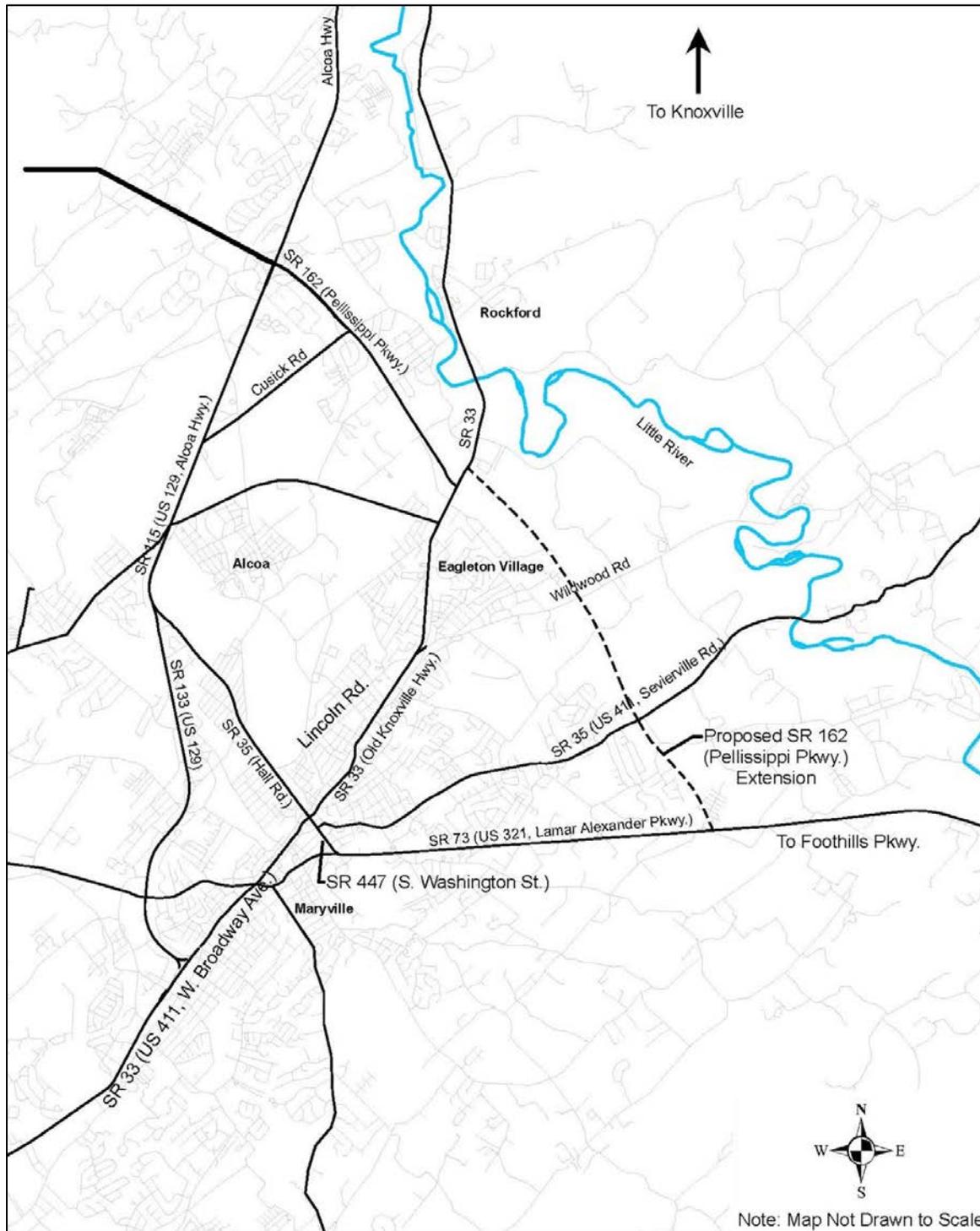
The study area includes approximately 50 miles of roadways currently used by drivers whom the proposed project would serve by linking the northwestern and eastern sections of Blount County. These roadways include:

- **Cusick Road** in Alcoa from SR 115 (US 129, Alcoa Highway) [log mile (LM) 0.00] to SR 162 (Pellissippi Parkway) (LM 1.76), a distance of approximately 1.76 miles;
- **Wildwood Road** from Old Knoxville Pike (LM 0.00) in Maryville to the bridge over the Little River (LM 3.75) east of Eagleton Village; a distance of approximately 3.75 miles;
- **SR 162 (Pellissippi Parkway)** in Alcoa from SR 115 (US 129, Alcoa Highway) (LM 0.00) to SR 33 (Old Knoxville Highway) (LM 2.54), a distance of approximately 2.54 miles;
- **SR 73 (US Route 231, Lamar Alexander Parkway)** from SR 115 (US Route 129) (LM 10.57) in Maryville to Foothills Parkway (LM 22.33) east of Maryville, a distance of approximately 11.76 miles;
- **SR 35 (US 411/Sevierville Road)** from SR 115 (US 129, Alcoa Highway) (LM 0.00) in Alcoa to the bridge over the Little River (LM 4.95) east of Eagleton Village, a distance of approximately 4.95 miles;
- **SR 447 (South Washington Street)** in Maryville from SR 35 (LM 0.00) to SR 73 (US Route 231, Lamar Alexander Parkway) (LM 0.16), a distance of approximately 0.16 miles;
- **SR 33** from SR 115 (US 129) (LM 10.38) in Maryville to the Knox County Line (LM 20.64) in Rockford, a distance of approximately 10.26 miles;
- **SR 115 (US 129)** from SR 33 (US 411, West Broadway Avenue) (LM 10.45) in Maryville to the Knox County Line (LM 20.40) in Alcoa, a distance of approximately 9.95 miles; and

- **Lincoln Road** from State Route 35 (Hall Road) (LM 0.42) in Alcoa to Old Knoxville Pike (LM 2.14) in Maryville, a distance of approximately 1.72 miles.

Figure 1 displays a location map of the proposed project and study area, including major roadways and municipal boundaries.

Figure 1 — Study Area Location Map



TRAFFIC SAFETY ANALYSIS

To account for differences in roadway conditions that influence crashes (such as geometry, roadway surface, lane configuration, access density, and traffic volume), roadways within the study area are divided into segments that feature similar conditions throughout. **Table 1** lists the segments by route, termini (in LM and by the nearest feature) and length in miles.

Table 1 — Study Area Roadway Segments

Route	Start Segment		End Segment		Lgth. (mi.)
	LM	Feature	LM	Feature	
Cusick Rd.	0.00	SR 115 (US 129, Alcoa Hwy.)	1.76	SR 162 (Pellissippi Pkwy.)	1.76
Wildwood Rd.	0.00	Old Knoxville Pike	3.75	Bridge over Little River	3.75
SR 162 (Pellissippi)	0.00	SR 115 (US 129, Alcoa Hwy.)	2.54	SR 33 (Old Knoxville Hwy.)	2.54
SR 73 (US 231, Lamar Alexander Pkwy.)	10.57	SR 115 (US 129)	11.65	SR 33 (US 411, W. Broadway Ave.)	1.08
	11.66	SR 33 (US 411, W. Broadway Ave.)	11.83	SR 336	0.17
	11.84	SR 336	12.52	S. Washington St.	0.68
	12.53	S. Washington St.	17.21	Knoxville Urban Boundary	4.68
	17.22	Knoxville Urban Boundary	22.33	Foothills Pkwy.	5.11
SR 35	0.00	SR 115 (US 129, Alcoa Hwy.)	2.02	Lincoln Rd.	2.02
	2.03	Lincoln Rd.	2.97	High St.	0.94
	2.98	High St.	7.93	Bridge over Little River	4.95
SR 447 (S. Washington St.)	0.00	SR 35	0.16	SR 73 (US 231, Lamar Alexander)	0.16
SR 33	10.38	SR 115 (US 129)	10.67	N. of Henry St.	0.29
	10.68	N. of Henry St.	12.34	SR 35 (US 411, Washington St.)	1.66
	12.35	SR 35 (US 411, Washington St.)	13.16	Everett High Rd.	0.81
	13.17	Everett High Rd.	14.18	Lincoln Rd.	1.01
	14.19	Lincoln Rd.	15.47	SR 335 (E. Hunt	1.28
	15.48	SR 335 (E. Hunt Rd.)	15.86	SR 162 (I-140, Pellissippi Pkwy.)	0.38
	15.87	SR 162 (I-140, Pellissippi Pkwy.)	18.75	Caney Branch Rd.	2.88
	18.76	Caney Branch Rd.	20.64	Knox County Line	1.88
SR 115 (US 129)	10.45	SR 33 (US 411, W. Broadway Ave.)	20.40	Knox County Line	9.95
Lincoln Road	0.42	SR 35 (Hall Rd.)	0.84	Wright Rd.	0.42
	0.85	Wright Rd.	1.41	Harding St.	0.56
	1.42	Harding St.	2.14	Old Knoxville Pike	0.72

Historical Crash Data

TDOT provided historical traffic and crash data for use in the traffic safety analysis. This data includes crash data for the study area during the study period and traffic volume data at various points throughout the study area.

Crash Data

TDOT prepared crash data for the study area covering several time periods, provided as the data became available. The time periods include:

- January 1, 2006 to December 31, 2008, provided on February 18, 2009;
- January 1, 2007 to December 31, 2009, provided on January 11, 2011; and
- January 1, 2010 to December 31, 2012, provided on December 9, 2013.

The crash data includes information such as location, date, time of day, severity (including the total number of involved vehicles, injuries, and fatalities), crash events, weather conditions, and lighting conditions.

To avoid changes in traffic patterns, roadway construction, and trip origins and destinations from affecting statistical trends on crashes in the study area, the analysis only uses the last three full years of available data, from January 1, 2010 to December 31, 2012. This interval is defined as the *study period*.

Volume Data

TDOT additionally collects traffic data annually at count stations on state and local roadways throughout Tennessee; this data is then processed to determine the *annual average daily traffic* (AADT) for the roadway at the station, defined as the total volume of vehicles passing a point on a facility in a year, divided by the number of days in a year.

Table 2 lists the 36 TDOT count stations located on roadways within the study area, as well as the name of the route on which the count station is located and AADT for each year in the study period.

This historical traffic data is used in the analysis to calculate certain crash statistics for each year in the 3-year study period. The AADT for each segment in the analysis is assumed to be equal to the nearest count station or the average of all count stations in the segment.

Table 2 — TDOT Count Station Locations

Sta. No.	Route Name	AADT (vehicles/day)		
		2010	2011	2012
09000013	SR 115 (Alcoa Hwy.)	52,56	54,45	51,73
09000015	SR 115 (US 129, Alcoa Hwy.)	56,34	57,14	58,85
09000016	SR 33 (Old Knoxville Hwy.)	15,75	15,41	15,37
09000025	Wildwood Rd.	3,624	3,330	3,250
09000026	SR 33 (E. Broadway Ave.)	12,57	15,22	12,12
09000027	SR 35 (N. Hall Rd.)	18,20	17,58	17,58
09000042	SR 35 (Sevierville Rd.)	11,27	11,56	11,55
09000043	SR 73 (US 231, E. Lamar Alexander Pkwy.)	21,42	22,61	21,81
09000045	SR 73 (US 231, E. Lamar Alexander Pkwy.)	13,61	14,32	14,72

Sta. No.	Route Name	AADT (vehicles/day)		
		2010	2011	2012
09000089	SR 115 (US 129)	25,31	25,99	26,93
09000090	SR 115 (US 129)	38,64	37,09	36,31
09000091	SR 33 (US 411, W. Broadway Ave.)	16,58	18,19	16,92
09000092	SR 73 (US 231, W. Lamar Alexander Pkwy.)	22,05	23,16	22,74
09000093	SR 115 (US 129)	37,05	37,70	37,67
09000095	SR 115 (US 129)	39,59	42,73	42,16
09000096	SR 33 (US 411, W. Broadway Ave.)	11,20	10,99	11,61
09000098	SR 35 (N. Washington St.)	22,51	22,36	23,72
09000104	SR 35 (S. Washington St.)	22,27	21,57	22,27
09000105	SR 33 (E. Broadway Ave.)	8,778	9,012	8,955
09000107	Lincoln Rd.	8,079	8,321	7,581
09000111	SR 115 (US 129)	33,25	36,94	36,54
09000112	SR 115 (US 129, Alcoa Hwy.)	53,53	50,99	52,22
09000119	Cusick Rd.	1,600	1,790	1,841
09000121	Cusick Rd.	3,793	4,070	4,368
09000125	SR 35 (Sevierville Rd.)	8,161	8,528	7,538
09000139	SR 35 (N. Hall Rd.)	22,18	22,85	22,28
09000153	SR 73 (US 231, E. Lamar Alexander Pkwy.)	20,92	19,54	21,05
09000159	SR 73 (US 231, E. Lamar Alexander Pkwy.)	19,04	18,08	17,61
09000173	SR 33 (Old Knoxville Hwy.)	7,173	5,605	6,234
09000176	SR 447 (S. Washington St.)	20,18	19,30	20,83
09000180	SR 73 (US 231, W. Lamar Alexander Pkwy.)	25,38	24,42	23,09
09000191	SR 162 (Pellissippi Pkwy.)	10,99	10,09	11,30
09000216	SR 115 (US 129, Alcoa Hwy.)	42,00	44,90	45,35
09000220	SR 162 (Pellissippi Pkwy.)	10,95	11,10	10,85
93000117	SR 33 (Maryville Pike)	4,964	4,626	5,459
93000119	SR 115 (US 129, Alcoa Hwy.)	46,91	47,81	49,25

Crash Rate and Severity

Of the 1,916 recorded crashes occurring within the study area during the study period, 1,442 crashes (approximately 75%) involved only property damage, while 386 (approximately 20%) resulted in a non-incapacitating injury, 77 (approximately 4%) resulted in an incapacitating injury, and 11 (approximately 1%) resulted in a fatality. **Figure 2** displays the proportions of crashes by severity for the study period.

Table 3 lists the recorded crashes with fatalities that occurred during the study period. Of the fatal crashes, four (approximately 36%) were single-vehicle crashes, while the remaining seven (approximately 64%) involved multiple vehicles. Four crashes occurred at intersections, with an additional crash occurring at an underpass. Three crashes involved angle collisions, and one crash involved a head-on collision. Most crashes occurred under clear conditions during daylight hours, although three occurred at night under lighted conditions, the vast majority of the crashes occurred along SR 115/US 129.

Figure 2 — Recorded Crashes by Severity

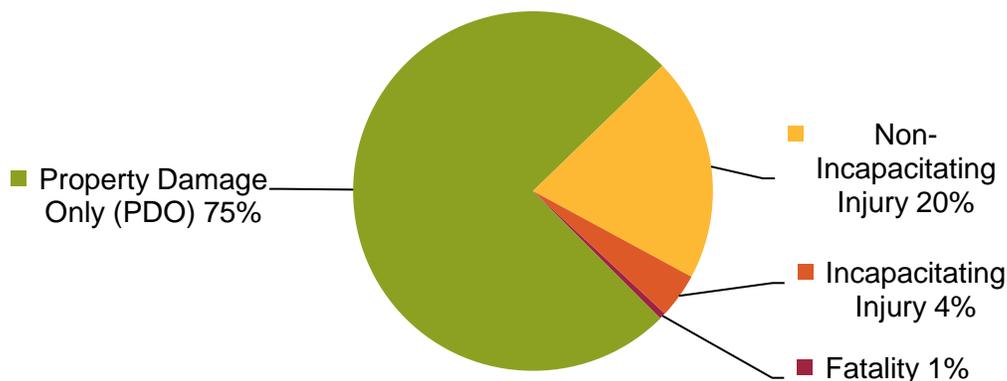


Table 3 — Fatal Recorded Crashes

Roadway	LM	Date Time	Location	Most Harmful Event	Manner of First Collision	Weather Cond.	Lighting Cond.
Wildwood Rd.	0.230	2011-08-04 04:44 PM	At an Intersection	Vehicle in Transport	Angle	Clear	Daylight
SR 73 (US 231)	17.650	2011-09-01 05:10 PM	Along Roadway	Other Non-Collision	No Collision	Clear	Daylight
SR 35	0.510	2012-06-15 05:50 AM	Along Roadway	Vehicle in Transport	Angle	Clear	Dawn
SR 35 (US 411)	5.436	2011-06-30 03:33 PM	Along Roadway	Vehicle in Transport	Sideswipe Opp. Dir.	Clear	Daylight
SR 115 (US 129)	11.150	2012-07-31 04:33 AM	Along Roadway	Vehicle in Transport	Head-On	Rain	Dark (Lighted)
SR 115 (US 129)	14.698	2010-02-27 05:22 PM	Along Roadway	Earth Embankment	No Collision	Clear	Daylight
SR 115 (US 129)	15.290	2010-06-04 08:36 PM	Underpass	Light Support	No Collision	Clear	Dark (Lighted)
SR 115 (US 129)	16.801	2012-12-06 01:25 PM	At an Intersection	Vehicle in Transport	Angle	Cloudy	Daylight
SR 115 (US 129)	17.280	2010-09-30 02:15 PM	At an Intersection	Vehicle in Transport	Angle	Clear	Daylight
SR 115 (US 129)	17.370	2010-10-16 03:04 PM	At an Intersection	Vehicle in Transport	Sideswipe Same Dir.	Clear	Daylight
SR 115 (US 129)	18.670	2011-12-17 11:08 PM	Along Roadway	Other Post / Pole / Support	No Collision	Clear	Dark (Lighted)

Several parameters are used to define the frequency and severity of crashes during the study period, locate any statistical trends in the crash data, and determine if any segments, spots, or intersections within the study area are eligible for funding for safety improvements. The parameters include:

- *Exposure rate (E)*, defined as the distance traveled by vehicles in a segment of roadway and measured in the analysis by million vehicle-miles (MVM);
- *Actual crash rate (R)*, defined as the number of crashes per MVM;
- *Average crash rate (R_A)*, defined as the average crash rate on roadways with similar lane configurations and functional classifications throughout the state of Tennessee;
- *Critical crash rate (R_C)*, defined as a limit above which the difference between the actual and average crash rates becomes statistically significant and not due to normal variation;
- *Actual crash rate / critical crash rate ratio (R/R_C)*, the ratio of the actual to critical crash rates; and
- *Severity index (SI)*, the weighted ratio of fatal and injury crashes to total crashes.

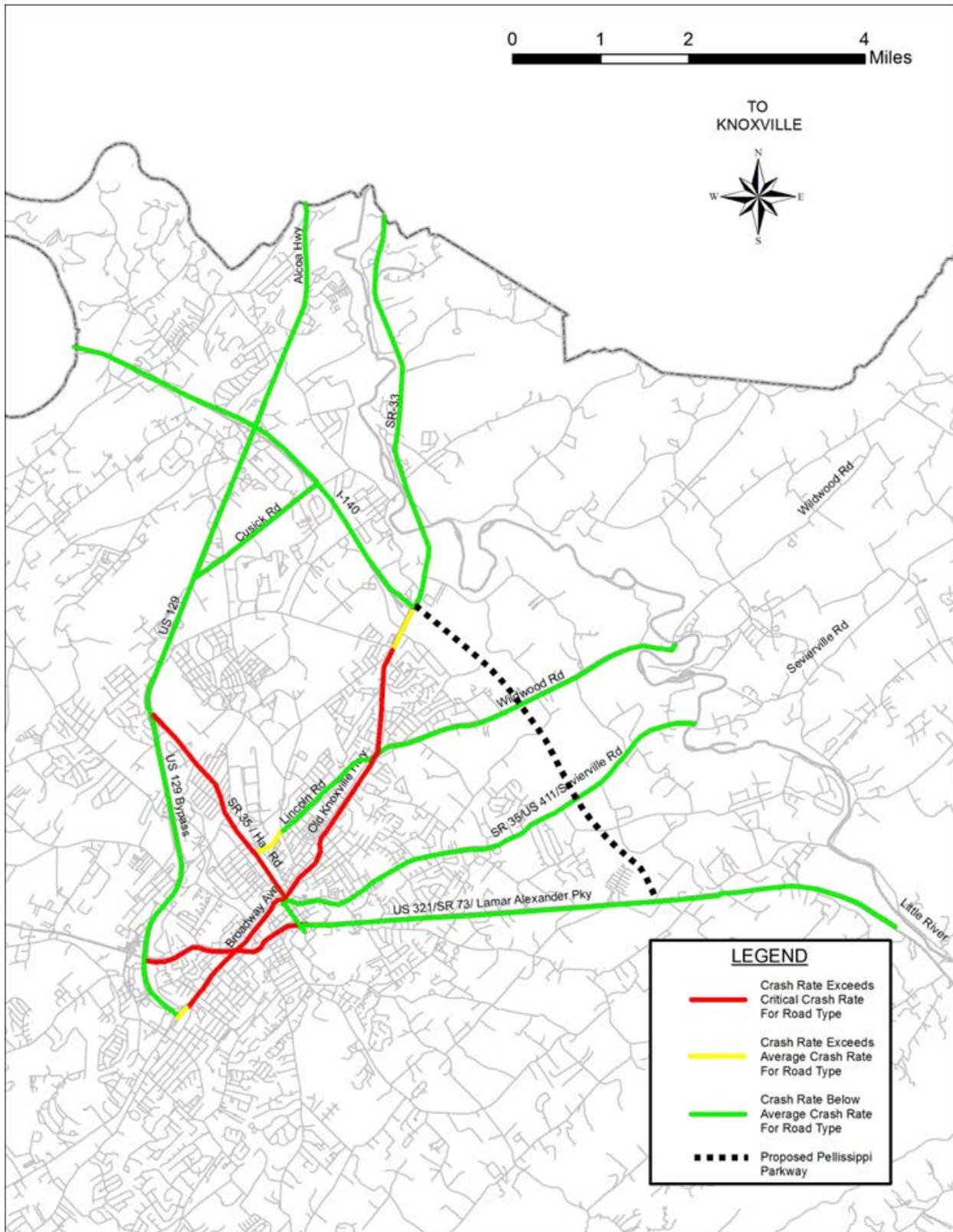
Table 4 lists crash rates and other parameters by segment for the study period.

Table 4 — Calculated Crash Parameters by Segment

Route	St. LM (mi.)	End LM (mi.)	E (MVM)	R (crash /MVM)	R _A (crash /MVM)	R _C (crash /MVM)	R / R _C	SI
Cusick Rd.	0.00	1.76	7.865	1.271	2.895	4.370	0.291	0.200
Wildwood Rd.	0.00	3.75	13.979	1.931	2.895	3.990	0.484	0.259
SR 162	0.00	2.54	30.294	0.132	0.981	1.416	0.093	0.000
SR 73 (US 231, Lamar Alexander Pkwy.)	10.5	11.6	26.814	3.580	1.777	2.394	1.495	0.219
	11.6	11.8	4.527	5.964	1.777	3.345	1.783	0.185
	11.8	12.5	15.284	3.860	1.777	2.603	1.483	0.186
	12.5	17.2	103.10	1.649	1.777	2.087	0.790	0.265
SR 35	17.2	22.3	79.667	0.577	0.733	0.963	0.600	0.391
	0.00	2.02	44.535	4.244	1.777	2.253	1.884	0.249
	2.03	2.97	23.134	4.755	2.466	3.247	1.464	0.191
SR 447	2.98	7.93	53.010	1.660	2.334	2.832	0.586	0.284
	0.00	0.16	28.429	4.254	2.466	4.554	0.934	0.133
SR 33	10.3	10.6	5.477	2.191	1.777	3.193	0.686	0.083
	10.6	12.3	31.354	3.062	2.334	2.985	1.026	0.146
	12.3	13.1	8.961	3.794	2.334	3.578	1.061	0.412
	13.1	14.1	14.732	3.733	2.334	3.295	1.133	0.145
	14.1	15.4	20.204	3.465	2.334	3.150	1.100	0.257
	15.4	15.8	6.462	5.417	2.334	3.810	1.422	0.286
	15.8	18.7	20.003	3.099	2.334	3.154	0.983	0.258
SR 115 (US 129)	18.7	20.6	10.337	2.128	2.334	3.488	0.610	0.409
	10.4	20.4	471.85	1.424	1.777	1.921	0.742	0.263
Lincoln Road	0.42	0.84	3.679	1.087	2.895	5.095	0.213	0.000
	0.85	1.41	4.906	1.427	2.404	4.135	0.345	0.571
	1.42	2.14	6.308	0.951	2.895	4.551	0.209	0.000

Figure 3 displays the crash rates by location on a map of the study area. Green lines indicate that the crash rate for the segment of roadway is below the average for similar roadways, while yellow lines indicate that the crash rate was above the average rate but below the critical rate, and red lines indicate that the crash rate exceeded the critical rate.

Figure 3 — Crash Rates by Location



Crash Dates and Times

Figure 4 displays recorded crashes during the study period by month. September had the fewest crashes in a single month during the study period (138), while June had the most (181).

Figure 4 — Recorded Crashes by Month

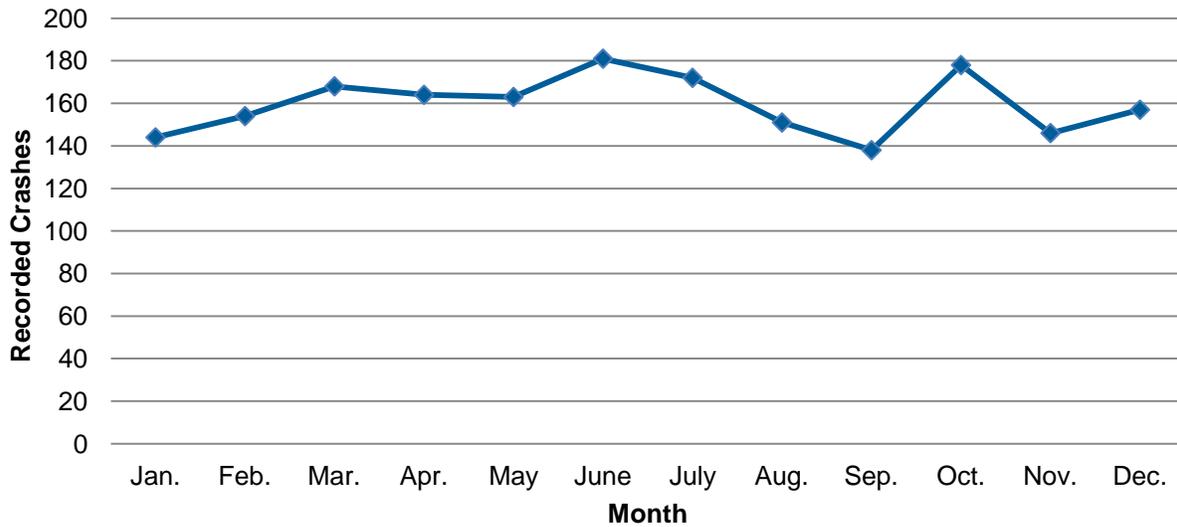


Figure 5 displays crashes by day of week. Friday had the highest number of crashes (351), while Sunday had the lowest (155). Approximately 81% of crashes (1,557) occurred on weekdays.

Figure 5 — Recorded Crashes by Day of Week

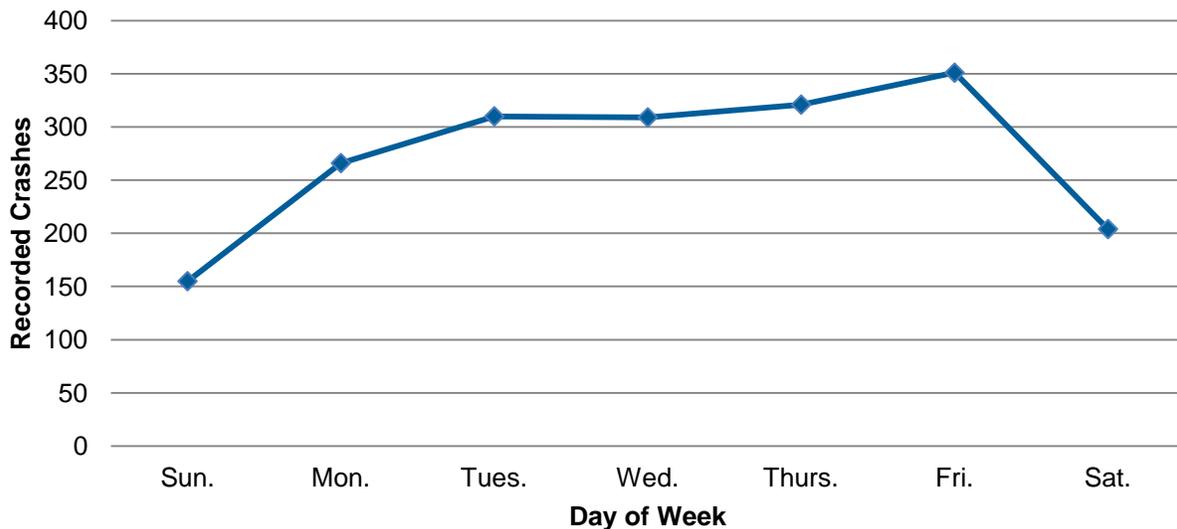
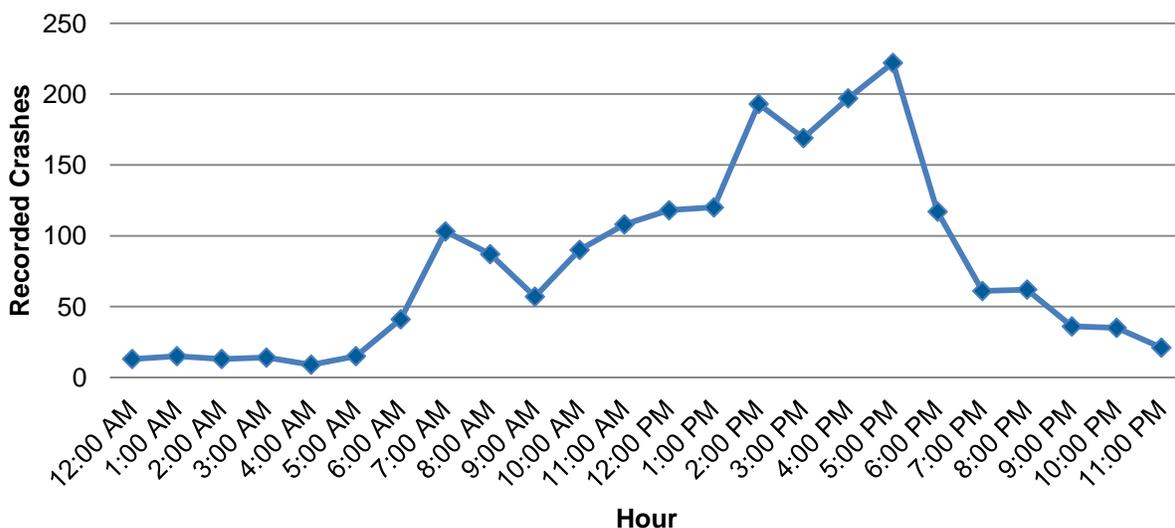


Figure 6 lists crashes by time of day. The hour with the highest number of crashes during the study period was 5:00–6:00 PM (222), while 4:00–5:00 AM had the lowest (9). Approximately 32% of crashes (609) occurred during typical peak hour periods (7:00–9:00 AM and 4:00–6:00 PM).

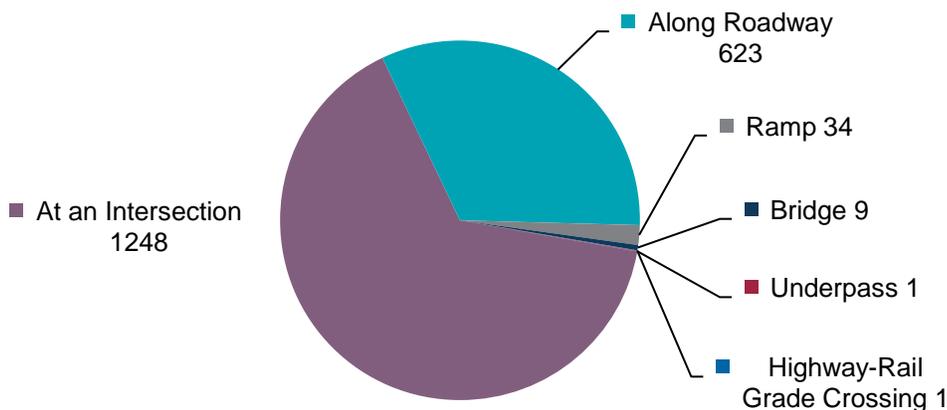
Figure 6 — Recorded Crashes by Time of Day



Crash Types

Figure 7 displays the recorded crashes by the type of location where the crash occurred. Approximately 1,248 crashes (65% of the total) occurred at an intersection, while 623 crashes (33%) occurred along the roadway outside of an intersection. Additional locations include at an on- or off-ramp (34 crashes), at a bridge or overpass (9 crashes), at an underpass (1 crash), and at a highway-rail grade crossing (1 crash).

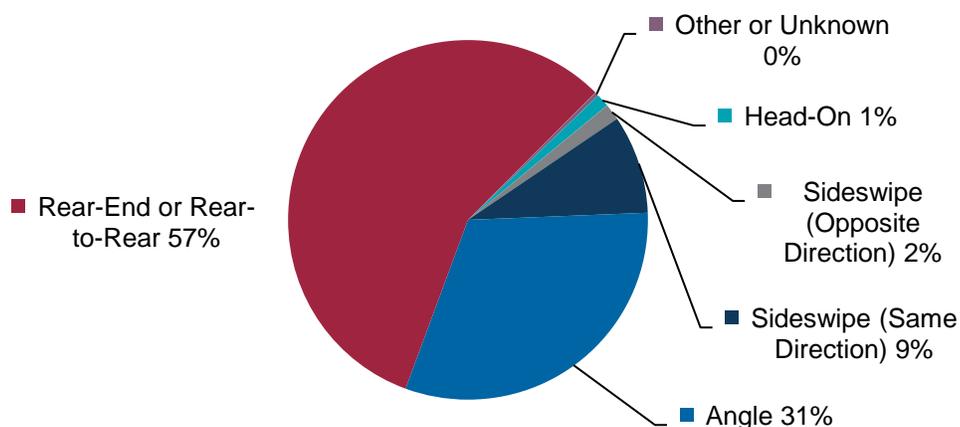
Figure 7 — Recorded Crashes by Location Type



The majority of the 1,916 recorded crashes in the study area involved collisions between two or more vehicles (1,685 crashes, or 88% of the total crashes).

Of the crashes involving two or more vehicles, 958 (approximately 57%) were rear-end or rear-to-rear crashes, while 527 (approximately 31%) were angle crashes; of the remainder, 149 (approximately 9%) were same-direction sideswipes, 25 (approximately 2%) were opposite-direction sideswipes, and 20 (approximately 1%) were head-on crashes. The manners of collision of six crashes were unknown. **Figure 8** displays the proportions of multi-vehicle crashes by manner of collision.

Figure 8 — Recorded Multi-Vehicle Crashes by Manner of Collision



CONCLUSIONS

As noted in **Table 4**, several segments of roadways within the study area exceeded the statewide average for similar roadways. Portions of three roadways exceeded the critical crash rate as well:

- SR 73 (US 321, Lamar Alexander Parkway) in Maryville from SR 115 (US 129) (LM 10.57) to SR 447 (South Washington Road) (LM 12.52);
- SR 35 from SR 115 (US 129, Alcoa Highway) (LM 0.00) in Alcoa to SR 35 (US 411, High Street) (LM 2.97) in Maryville; and
- SR 33 (Broadway Avenue) from north of Henry Street (LM 10.68) in Maryville to SR 335 (East Hunt Road) (LM 15.47) in Alcoa.

Most crashes were rear-end or angle crashes between multiple vehicles at intersections. Single-vehicle crashes accounted for approximately 12% of the total crashes.

The proposed project would be expected to divert traffic from roadways in the study area to the proposed roadway. This transfer would result in a decreased exposure rate (previously defined as the distance traveled by all vehicles traversing a segment of roadway) for roadways in the study area with a corresponding increase for the proposed roadway. However, the statewide average crash rate for roadways similar to the proposed roadway (four-lane divided freeway) is 0.981, less than the average or calculated crash rates for most of the roadways in the study area. As such, assuming crash rates for the study area remain similar to those during the study period, transferring traffic volumes from roadways in the study area to the proposed roadway may be expected to reduce the total crashes in the area.